ODM ODM Teachers' Note

Class	X	Subject	Chemistry	Plan For	Toppers & Average
Pd	1	Chapter	Acids ,Bases and salts		
Sub Concepts		Identifying Acids and Bases and knowing their sources.			
Teaching Aid to be used		Collection of certain chemicals that available at home like : Baking Soda, curd, soap solution, tamarind solution and lemon juice….			

Sl. No	Step Wise (What to be done)
1	ACIDS: Those chemical substances which give sour in taste and turn blue litmus to red.BASES: are those substances which are bitter in taste and turns red litmus to blue.
2	Hydro chloride acids, vinegar, tamarind juicers common acids but washing soda,Baking soda and milk of magnesia are common bases .
3	Some new concepts of knowing acids and bases: (Arrhenious concept and Bronstead and Lowery concepts, lastly Lewis concepts)
4	Acids: they dissociate to give H+ ions but Bases if dissolved ,dissociate to giveOH- ions. $HCl + H_2O$----------$H_3O^+ + Cl^-$ $MgO + H_2O$ -------- $Mg^{2+} + OH^{1-}$
5	Depending upon sources , they are of two types: Organic and inorganic acids.Organic - citric acid, tartaric acid, etc. Inorganic acids: HCl, H_2SO_4,HNO_3.
6	Citric acid - lemon, oranges… Tartaric acid- tamarind and grapes…Milk of Magnesia- $Mg(OH)_2$

7	Bases usually reacts with Acids to give salt and water. Soluble bases are known as ALKALIS. (NaOH, KOH,$Mg(OH)_2$ ...)
8	Qn. Is it necessary that all bases should carry OH- ions ? If not, how could they aresaid to be bases ? Give two such examples.
9	Name one source of Ascorbic acid ?
HA	Q. Mention four properties of acids and also bases. Q. Although sugar contains H-atom still it does not behave as an acid, why ? Q. Cl_2 gas also behaves as an acid and NH3 without carrying OH- ions alsobehave as base why ?

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Class	X	Subject	Chemistry	Plan For	Toppers & Average

Pd	2	Chapter	Acids ,Bases and salts

Sub-Concepts	Strength of acids and bases. Detection of acid and base through different Indicators
Teaching Aid To be used	Different samples collected from home and lab.(curd, vinegar, lemon, soapsolution, quick lime,dil,HCl , dil.H_2SO_4....)

Sl. No	Step Wise (What to be done)
1	Since acids are soluble in water, they sometimes dissociate fully orpartially,depending upon their degree of dissociable.

2	$H_2SO_4+H_2O$ ----------> $H_3O+ +SO4^{2-}$ (compeltely) $CH_3COOH+H_2O$ ----------> $CH_3COO^- + H^+$(less extent)
3	Strong alkais: NaOH, KOH weak alkais:$Mg(OH)_2$, NH_4OH
4	NaOH- monoacidic base, H_2SO_4- dibasic acid (basicity-1 and acidity-2)
5	Indicators : natural and synthetic ● Again natural are of two types : colr (Chinarose, red cabbage, turmeric) and olfactory(smell) (ONION peels, vanilla, clove oil)
6	Synthetic indicators : methyl orange, phenolphthalein (litmus solution)
7	Indicators Nu A.c. Base rose pet magenta red green Litmus sol purple red blue ONION peel usual usual vanishes Methyl orange orange red yellow
8	What is Olfactory indicators ? Give example of any one case.
9	Although acetic acid contains 4 H- atoms still it is a monobasic acid ?
10	
HA	1.What will be the change in color and odour of following acids and bases in turmericand phenolphthalein indicators ? dil.HCl and baking soda. 2. What is Universal Indicator ? What will be its changes in color in the following solutions: solution of Oxallic acid, Washing Soda solution and Sodium acetate solution.

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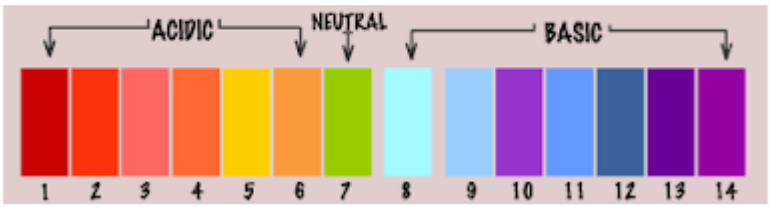
Class	X	Subject	Chemistry	Plan For	Toppers & Average

Pd	3	Chapter	Acids ,Bases and salts

Sub-Concepts	**Universal Indicators, Estimation of PH, it's applications.**
Teaching AidTo be used	**Some household samples and lab chemicals to be taken off.**

Sl. No	Step Wise (What to be done)
1	**Universal indicator: it is mixture of so many natural and synthetic indicators which gives different colorations with different types of solution**
2	**Once this indicator got impregnated into a blotting paper or tissue paper it forms aPH paper, which makes the most convenient way to know more accurately it's acidic or basic strength. Latest development is your PH scale.**
3	**P PH value : Mathematically -be log value of H- oom concentration.Which has a range of 0 to 14.PH= - log(H)** **PH -0 (neutral), PH 7 basic PH more than 7 basic**
4	**Different PH value for different acidic and basic strengths.:** **0 to 2.5-----2.5 to 5.5---------6.5 to 7.5-------- 7.5 to9.5 ---------- --9.5 to 14** **Highly ac---moderate ac---neutral--'mild basic ---------- strongly basic** **Dil.HCL Vinegar water washing soda caustic potash**
5	**Some numerical based on PH Determine the PH of 0.5M H2SO4 soon.**
6	**Applications of PH value:** **A. Tooth decay** **B. Using antacid** **C. Testing soil quality for farmers** **D. Self defence by plants itself** **E. Rubbing calamine or soap soon during aunt's or bee's stinging** **F. Digestion of food**
7	https://youtu.be/hEnqBPoL_4E (a video showing determination of pH by Expt.)
	The pH Scale 
HA	**I) Determine the PH of 1M HCl solution ?**

	Ii) Explain the following: **Occurring dental caries** **Why does sometimes the farmer apply lime water in his crop fields?**
	iii) Do the answers of Intext qns pg no.45. Of NCERT.

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Class	X	Subject	Chemistry	Plan For	Toppers & Average

Pd	4	Chapter	Acids ,Bases and salts

Sub-Concepts	Chemical behaviour of Acids: A. Reaction with metals B. Reaction with metal oxides and hydroxide C. Reaction with metal carbonated and bi carbonated D. Reaction with metal sulphide, metal sulphide and metal nitrates E. Reaction with nonmetals
Teaching AidTo be used	Chemicals required from lab to do some relevant expts.

Sl. No	Step Wise (What to be done)
1	Metal + acid --------- >Salt + H2 (g) except in HNO3 since strong Ox agent But it can do so in Mg and Mn The vigorouscity of reaction decreases as we go down in MRS.
2	Ex. HCl + Zn -' ----------$>ZnCl_2 + H_2$ (g) H_2SO_4+ Cu ---------- >No Reaction (due to less reactive than H) ○ But they can react with Aqua Regia (a soon mixture of 3 vol conc HCland 1vol conc HNO3) to form corresponding metallic chloride. ○ Au + Royal water ----------AuCl3 (Aurric chloride)
3	Acid + Metal Oxide/ Hydroxides ---------- > S alt + H2O
4	Ex. $Mg(OH)_2$ + HCl ---------- $>MgCl_2$ +H2O (vigorosity of reaction decreases as we go down in MRS) CaO + H_2SO_4 ----------$>CaSO_4 + H_2O$
5	Acid + Metal carbonate/bicarbonate---------- > Salt + CO2(g) + H2O Ex. $CaCO_3$ + HCl -------- $>CaCl_2 + H_2O + CO_2$
6	Some other reactions : ZnS + HCl ---------- $>ZnCl_2$ + H2S $CaSO_3$ + HCl ---------- > $CaCl_2$ + SO2 + H2O Mg(NO_3) +HCl----------$>MgCl_2 + NO_2 + H_2O$ Acid + Nonmetal---------- > usually no reaction but few like S + HNO_3 --------- $>H_2O$ + H2SO_4 + NO_2(g)

7	Explain the behaviour of following metals with Dil.HCl : Na., Fe, Cu.
8	Describe the observation and chemical reaction of crushed egg shell and vinegar.
9	* a video showing reactions of Vinegar with Baking Soda and detecting the release of CO2 gas through lime water. https://youtu.be/YGzjAzbdACg
HA	Why H_2 gas is not released when dil.HNO_3 reacts with metals like Zn ?
	Complete the qn answer of in text qn of pg 47.

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Class	X	Subject	Chemistry	Plan For	Toppers & Average

Pd	5	Chapter	Acids Bases and Salts.

Sub-Concepts	Reaction of Bases with metals and metal oxides (amphoteric), metallic salts Introduction to salts
Teaching AidTo be used	Chemicals required : Zinc granules and NaOH pallets , CuSO4 crystalsRequired lab apparatus.

Sl. No	Step Wise (What to be done)
1	Since metals and metallic oxides are basic they don't prefer to react with bases except amphoteric metals and oxides.(Zn, Al, Pb, Sn, ZnO, Al_2O_3….) With strong bases like NaOH, KOH...
2	Ex. NaOH + Zn ---------- Na2ZnO2 + H2(g) sodium zincate KOH + Al2O3 ---------- KAlO2 + H2O potassium aluminate
3	Displacement reaction : More reactive metals displaces less reactive one from their corresponding salts Ex. Zn + $CuSO_4$---------- $ZnSO_4$ + Cu (blue color Copper sulphate changes tocolorless and reddish brown Cu deposited over Zn) Fe + $CuSO_4$ ---------- $FeSO_4$ + Cu(blue changes to light green)

	Ag + CuSO4 ----------No reaction
4	**A.c. + B.s --------- Salt + water** **NaOH + HCl---------- NaCl + H2O**
5	**Different types of salts : simple salts, complex salts, compound salts, double salts,family of salts, salts of water of crystallization.**
6	**Categorizing salts into acidic, basic and neutral type depending upon their actions and unions : Na2SO4 - neutral** **K_2CO_3 -- basic** **NH_4Cl-- acidic**
7	**Explain the nature of following types of salts: $NaHCO_3$, $CaSO_4$, KCl.**
8	**Give justice that Al_2O_3 is an amphoteric Oxide with proper example.**
9	
HA	**Do all the in text and of pg-52 of NCERT.**
	If four students took 4 test tubes with 4 diff salt solutions : FeSO4 CuSO4, ZnSO4 and AgNO3. Each one added iron filings with it and shaken for 10 to 15 mins. Writetheir observation and chem reactions.

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Class	**X**	**Subject**	**Chemistry**	**Plan For**	**Toppers & Average**

Pd	**6**	**Chapter**	**Acids, Bases and Salts**

Sub-Concepts	**Some special types of salts and their preparation and studying theirproperties.(NaCl, NaOH, Na2CO3, NaHCO3)**
Teaching AidTo be used	**No need, smart board.**

Sl. No	Step Wise (What to be done)
1	Common salt or rock salts are obtained from sedimentary rocks NaOH : Obtained by Chlor-alkali process(also we can obtain Cl_2, H_2, NaOH. Byelectrolysis of brine solution
2	Uses of Cl_2, H_2, NaOH. Separately.
3	Preparation of Baking soda and washing soda : by passing CO_2 gas through ammonical brine solution. Insoluble sodium bicarbonate is filtered out and strongly heated to obtain dry sodium Carbonate. Further being crystallized it forms $Na_2CO_3.10\ H_2O$ (washing soda) ● Above process is Solvey process.
4	Uses of Baking Soda, washing soda .(soap, detergent, paper, glass, refining,removing hardness etc.)
5	Preparation of NaOH is said as Chlor-alkali process: During this preparation both Chlorine and strong alkali NaOH is produced . Like NaCl(conc) ----------> electrolysis----------> NaOH + Cl_2 + H_2
6	Difference between Baking soda and baking powder and one application of each.
7	
HA	1. Describe the preparation and properties of washing soda with correct reactions .
	2. Explain about the following uses of baking soda : a) Soda - acid fire extinguisher, b) bakery industry
	3. Which chemical is used in softening hard water ? Explain its actions in it.

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Class	X	Subject	Chemistry	Plan For	Toppers & Average

Pd	7	Chapter	Acids, Bases and Salts

Sub-Concepts	**Preparation, Properties and Uses of Bleaching Powder ($CaOCl_2$)and Plaster of Paris($CaSO_4$. 1/2H_2O).**
Teaching Aid To be used	**Smart board.**

Sl. No	Step Wise (What to be done)
1	**Preparation of Bleaching Powder :** **By passing Chlorine gas over dry slaked lime :** **Ca(OH)2 + Cl2 ----------> CaOCl2 + H2O**
2	**Properties of Bleaching Powder :** **A) Being dissolved in water releases Chlorine and does cleansing action.** **B) Being kept in open it looses its cleaning action due to loss of Cl2(g) and formation of hard Calcium Carbonate (CaCO3)** **C) When reacts with dil.HCl or dil.H2SO4 it releases all Cl2 available with it which proves its capacity of cleansing action.**
3	● **Uses of Bl Powder :** ● **Sterilising water** ● **Cleaning clothes** ● **Preparation of Chloroform** ● **Oxidising Agent in Lab**
4	**Preparation of POP (CaSO4. 1/2H2O) :** **Heating gypsum in a kiln to a temp of 100deg(373K)when it undergoes partial dehydration to give POP CaSO4.2H2O----------->CaSO4. 1/2H2O + 1 1/2H2O** **If the temp go beyond 473K it turns into "Dead Burnt Plaster".**
5	**Properties of POP :** *** White amorphous powder** *** When it mixed with three times its weight with water for 10 to 15 mins it turns into a hard plastic mass type known as Gypsum** **CaSO4 .1/2 H2O + 1 1/2 H2O ----------> CaSO4. 2H2O**
6	**Uses of POP :** **A) Surgical bandages for setting broken bones** **B) Making toys, statues and decorative materials.** **C) Making coating over ceiling, pillars and walls.** **D) To make apparatus airtight and fire proof**
7	

HA	**1.How can you obtain Bleaching Powder and mention one of its application.**
	2.What is Dead Burnt Plaster ? Why it is of no use ?
	4. What happens when **A) water is added to plaster of Paris ?** **B) Bleaching powder is treated with dil. HCl ?**