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ODM Teachers' Note

Class	X	Subject	Chemistry	Plan For	Toppers & Av

Pd	I	Chapter	Chemical Reactions and Equations

Sub-Concepts	Precise representation of a Chemical reaction. Information and Limitations that can be conveyed from a Chemical reaction.
Teaching Aid To be used	Chemicals : Lead Nitrate, Crystals of Ferrous Sulphate, Potassium Iodide, Iron filings and CuSO4 crystals. Chemical apparatus from Lab.
Teaching Learning Out come	After going through this lesson students can able to know * What is a chemical reaction and how does it occur ? * What maximum information can be conveyed through a chemical equation.

Sl. No	Step Wise (What to be done)
1	*Initially we have to make understood the student about , What is a chemical change and what is a physical change ?*
2	***What can happen during a chemical reaction ? (color,odour,texture,gas released,insoluble mass formed,heat gained or heat lost etc.)***
3	Some chemical reactions should have to be performed to the students.They have to take observations and note it represent them in chemical equation forms. -> Adding dil. HCl with Zinc granules, -> Heating $Pb(NO_3)_{2)}$ salt in a hard glass test tube. -> Adding BaC_{l2} solution with Na_2SO_4 solution.
4	Symbolically representation of a chemical reaction in precise manner (showing their states) $2Mg(s) + O_2(g)$----------> $2MgO(s)$ $Pb(NO_3)_2(s)$----------->$2PbO(s) + 4\ NO_2(g) + O_2(g)$
5	Information conveyed from a chemical reaction and it's limitations.
6	Need of writing a chemical reaction in a balanced form.
7	Why do you take zinc granules instead of zinc pieces ?
8	A metallic salt if gently heated becomes colorless but when strongly heated it releases two gases of burning sulphur smell and forming a residue of brown coloured residue.when that metal is kept in open it gets rusted forming a brown

	coat ? Identify all these and mention the reactions involved.

Home Assign.	Draw all the relevant diagrams discussed above mentioned reactions in your copy with proper labelling.

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

Pd	2	**Chapter**	Chemical reactions and Equations

Sub-Concepts	Balancing chemical reactions. Different methods of Balancing : Frequency - No. for balancing equation. Algebraic method Larger Molecular Formula method Hit and Trial method (giving focus to this one) * **suitable method should be applied for poor students**
Teaching Aid To be used	A video has been uploaded to give knowledge about technique of balancing chemical equations.
Teaching Learning Outcome	Going through this particular lesson students could able to know how to balance a Chemical equation and what is the need of balancing it ? And more-ever they will be able to understand which one is most convenient way and why ?

Sl. No	**Step Wise (What to be done)**
1	Simple equations for balancing should be given to the students first . (Let the student try in Hit and Trial method.) $Fe + H_2O$---------$Fe_2O_3 + H_2$
2	Some difficult chemical reactions should be given to make balance by the same method. Ex . Potassium Dichromate + Sulphuric acid----------Potassium Sulphate + Chromium Sulphate + water + Oxygen
3	Different methods of balancing chemical reactions.(Algebric method, Frequency no method , Hit and Trial method)
4	Hit and Trial method should be mostly appreciated and few more examples should be practiced.

5	Why do we need to balance the chemical equations ?
6	Balance the following chemical reactions: MnO_2+HCl --- > $MnCl_2$+Cl_2+H_2O $K_2Cr_2O_7$+ H2SO4-------> K_2SO4+$Cr_2(SO4)_3$+H_2O+(O) Step-1 To balance Mn first . it is already balanced. Step-2 Next to balance Cl atoms in both sides , multiply HCl by 4 in reactant side. Step-3 Next to balance H-atom we need to multiply H_2O by 2 . Now it is balanced. i.e. MnO_2 + 4HCl----------$MnCl_2$ + Cl_2 + 2H_2O

Home Assign.	Balance the equations given in your Text Book : Qn. No 6,7,8. Students will be assigned to complete all Exercise balancing questions to complete.

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

Pd	3	**Chapter**	Chemical Reactions and Equations

Sub-Concepts	Some more examples for practicing balancing chemical reactions. Providing some new technique like Oxidation and Reduction Method , Partial Ionic Equation method (Before some concepts on Oxidation No should be given)
Teaching Aid To be used	One Book for reference i.e. Language of Chemistry They have to work on a puzzle type Qn/linked video
Teaching Learning Outcome	By practicing more balancing, students could be well acquainted with all sorts of chemical reactions.

Sl. No	**Step Wise (What to be done)**
1	Few more examples for balancing equations. $Al_2(SO_4)_3$+NH_4OH---------- $Al(OH)_3$ + $(NH_4)_2SO_4$
2	Potassium Permanganate + dil.Hydrochloric acid---------- Potassium chloride + Chromium chloride + water + Oxygen

3	Some more questions need to be practised for the students for easy learning.
4	A test is to be conducted based on balancing chemical equations(10qns =10marks)
5	Balancing equations based on Oxidation and Reduction method :(giving that fundamentals) * only applicable for good students.
	Al +Fe_2O_3---------- > Al_2O_3 + Fe Ox. no of Al and Fe changes which we should have to adjust. Multiplying with relevant factors, i.e. 2 and 3. So, 2Al + Fe_2O_3--------> Al_2O_3 + 2Fe

Home Assign.	Write all the relevant equations from different chapters , check whether they are balanced or not unless you balance them. (bit by bit)

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

Pd	4	**Chapter**	Chemical Reactions and Equations

Sub-Concepts	Types of chemical reactions : Combination reaction Decomposition reaction Displacement reaction Double displacement reaction Red-ox reaction
Teaching Aid To be used	Chemicals required : Chemical Chloride , Sodium Sulphate,quick lime, Zinc granules and dil. HCl. Some apparatus from chemical lab.
Teaching Learning Outcome	After this lessson being taught students would able to catagorize different types of reactions and putting their validity during applications.

Sl. No	**Step Wise (What to be done)**

1	a) Combination reaction b) Decomposition reaction c) Displacement reaction
	d) Double displacement reaction e) Red-ox reaction
2	Only to discus first two types of reactions (definitions and examples)
3	Different types of decomposition reactions : Thermal, Electrolytic and Photolytic. (Explanation and examples from each type) $ZnCO_3$----------> ZnO + CO_2
4	Some relevant Practical demonstrations.
5	Give example of one one from each type of combinations: i)El and El ii) El + Comp iii) Comp + Comp $N_2 + 3H_2$--------> $2NH_3$ $CaO + H_2O$-----> $Ca(OH)_2$
6	Why silver chloride solution is kept in dark coloured bottle ?
7	Explain the electrolytic decomposition of molten alumina.
8	A metallic salt is used in black and white photography and if exposed to sun gets decomposed to form greenish white mass. Identify that salt and write the chemical reaction involved.
9	Why mostly decomposition reactions are endothermic in nature ?
Home Assign.	Solve Qn no.7 to 11 of exerciseNCERT Ch-1 by next class.

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

Pd	5	**Chapter**	Chemical Reactions and Equations

Sub-Concepts	Types of chemical reactions Displacement reaction Double Displacement reaction/ Double decomposition Red-ox reaction (Oxidation and Reduction reaction) Exothermic and Endothermic reactions

Teaching Aid To be used	Chemicals required : Zinc granules and $FeSO_4$ crystals. Required lab apparatus., $BaCl_2$ and Na_2SO_4 when added it turns white due to formation of insoluble mass of BaSO4.
Teaching Learning Outcome	From this lesson students can distinguish between Combination and Decomposition reaction, Displacement reaction and Double displacement reaction, Exothermic and Endothermic reactions.

Sl. No	Step Wise (What to be done)
1	What is Displacement reaction , few examples and demonstrations ?
2	What is Double-displacement reaction , few relevant examples through demonstration. [Relevant activities to be conducted in class itself]
3	Concepts of Oxidation , Reduction and Red-ox reactions, knowing about Ox.Agent and Red. Agent. CuO + H2O----------Cu + H2O Mention where Oxidation and where reduction occurs ?
4	Few more examples for practice. Why is it said as red-ox reaction : MnO_2 + HCl-----> $MnCl_2 + H_2O + Cl_2$ Mention here, which one is Oxidizing Agent and Which one is Reducing Agent Some applications : Respiration and Oxidation of metals.
5	Write the observations and chemical reactions : A solution of Copper Sulphate gets added with a) zinc granule b) Added with silver turnings iii) iron fillings
6	Give one example of a nonmetallic displacement reaction.
7	Why Precipitation reaction is a double displacement reaction. Explain with an example.
8	Is the Displacement reaction is opposite to Combination reaction ? If so explain how ?
HA	1. How Neutralization reaction is Double Displacement reaction ? Explain with an example.
	2. Write the answers of last In-text qns.

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Pd	6	Chapter	Chemical Reactions and Equations

Sub-Concepts	Corrosion and Rancidity.
Teaching Aid To be used	No need, Some videos and photographs to be shown from smart board or You-tube.
Teaching Learning Outcome	Here students can understand the effect of oxidation like Corrosion and Rancidity and its adverse effect. They will also be able to know how to protect against corrosion and rancidity.

Sl. No	Step Wise (What to be done)
1	Corrosion of Metals in different ways .(mainly corrosion of Iron, Copper,Silver and Aluminium)
2	Reactions in favour of all the above types. 4Fe + 3O2----------> 2Fe2O3.xH2O Cu+O2+CO2+H2O ------CuCO3.Cu(OH)2 Ag+H2S----------Ag2S + H2
3	Rancidity (causes and effect)
4	Prevention of corrosion and Rancidity. Corrosion: electroplating,galvanizing,alloying,oiling, painting and greasing. Rancidity: air tight, vacuum packing, using anti oxidants(BHT,BHA,Sodium Benzoate)
5	Name the basic compound formed on copper when exposed for a long time in air . How can these coating be removed easily ?
6	What is galvanization and how is it useful for iron articles ?
7	How could deep freezing able to preserve our food for a long time ?
HA	How does a green coating is formed over Cu metal?
	How N2 gas flush in prevent Rancidity ?