

DELHI PUBLIC SCHOOL GHAZIABAD
CLASS – X
LESSON PLAN
CHAPTER-1: Chemical reactions and equations

Unit	Chapter 1: Chemical reactions and equations
Class Transaction	Total: 9 periods (approx. 40 min each)
Pre-requisite for the course	This lesson requires previous knowledge of- • What is a chemical change? • What is a chemical equation? • What are reactants? • What are products? • Framing of formulae
Assessment of qualifying knowledge	1. Written test 2. Lab activity 3. Group Discussion 4. HW notebook
Objective	• Given the content (chapter) the learners will be able to describe and explain the given chemical reactions and write balanced chemical equations using symbols and formulae in their notebook with 90% accuracy.
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will be able to know and understand</i> 1. Characteristics of chemical reactions 2. Balanced chemical equation 3. Types of chemical reactions. 4. Corrosion 5. Rancidity <u>SKILLS AND COMPETENCIES</u> - <i>Students would be able to</i> 1. Express a chemical reaction through a balanced chemical equation 2. Develop the ability to analyze and differentiate between various types of chemical reactions 3. Provide examples for different types of chemical reactions. Apply concepts learnt in everyday problems. 4. Students will be able to explain redox reactions, identify oxidising and reducing agents 5. cite examples of oxidation in day to day life. Explain corrosion and rancidity and suggest ways to prevent them 6. Carry out practical in lab and develop critical thinking and collaboration in the process. 7. Answer knowledge, understanding and application based questions based on the topic. 8. Built character and citizenship amongst themselves by discussing /communicating how corrosion of iron is a serious problem and a

	threat to nation's economy.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- <i>Brain Storming</i>-The class would start with a discussion on what the students have already learnt in the previous classes and hence what is it that they would learn now. They would also be told the significance of the topic that they would be studying. <i>Introduction of the topic</i>- classroom demonstration on a chemical reaction. Students observe and justify why the performed reaction is a chemical reaction. Group activities Think pair, share: Rally Robin; Pose, pause, pounce and bounce, Experimentation <i>Guided practice followed by Independent Practice</i>- NCERT questions to be discussed in the classroom. Techniques /Strategies to be used: Quiz Daily Practice Problem MCQ Peer Assessment Student -teacher interaction, Wipro- G.O.s(web chart, flow chart and differentiation table,compare-contrast matrix), silent/ loud reading, collaborative learning,
Resources	Text Book: NCERT text book for science Reference Book 1. CBSE Exemplar 2. Sample papers / last years papers
Self Study, Home Work, Assignments	Independent Practice: Students would do the questions in their H.W notebooks as mentioned in the monthly planner by which we can assess their critical thinking and creativity HW notebooks to be marked as per the given plan: <i>Assessment Parameters:</i> The total marks for the activity is 5 marks On time submission.....1 mark Presentation/ Neatness(creativity).....1 mark Content(critical thinking and creativity).....3 marks It is also advised that the students come to the class with proper background knowledge of the topic under discussion. They can refer to the resources stated above.

Assessments	3 UNIT TESTS (20, 30, 30).....80 Marks MID TERM EXAMINATION.....80 Marks HALF YEARLY EXAMINATION.....80 Marks PRE BOARD-I EXAMINATION80 Marks PRE BOARD-II EXAMINATION.....80 Marks ANNUAL BOARD EXAMINATION.....80 Marks PERIODIC TEST By administering pen paper test we assess creativity and critical thinking. Average of the best two tests to be taken that will have a weightage of 10 marks. Best 2 Tests out of: Units tests, Midterm examination, Half Yearly examination. INTERNAL ASSESSMENT20 Marks Periodical Test 10 Marks By administering pen paper test we assess creativity and critical thinking. Subject Enrichment 05 Marks With the help of subject enrichment activities we assess communication ,collaboration, character building and citizenship Note Book Submission 05 Marks By writing the answers of three levels of spiral question we can assess their knowledge (Level 1 questions) critical thinking(Level 2 questions), creativity(Level 3 questions) Note Book Submission 05 Marks
Addressing Classroom Diversity	Due to various social backgrounds and multiple intelligences, the classroom might be a diverse arena. The following techniques can be used for various groups: <i>For gifted students:</i> • High order thinking questions • Encouragement for referring other resources <i>For weak students:</i> • Buddy help to be provided • Provide grade-up classes • Asset management classes <i>For differently abled students:</i> • Ignore spelling mistakes and formulae, if not written • Call parents at regular intervals • Provide grade-up classes

Marks	The weightage would be given by CBSE.
	Following questions will be asked to check students' understanding 1. Which among the following changes are exothermic or endothermic in nature? (a) Decomposition of ferrous sulphate (b) Dilution of sulphuric acid (c) Dissolution of sodium hydroxide in water (d) Dissolution of ammonium chloride in water 2. Why do we store silver bromide in dark coloured bottles? 3. Balance the following chemical equations and identify the type of chemical reaction. (a) $\text{CaO} + \text{CO}_2 \rightarrow \text{CaCO}_3$ (b) $\text{Mg} + \text{CuSO}_4 \rightarrow \text{MgSO}_4 + \text{Cu}$ (c) $\text{CH}_4 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$ (d) $\text{NH}_4\text{NO}_2 \rightarrow \text{N}_2 + \text{H}_2\text{O}$ 4. A magnesium ribbon is burnt in oxygen to give a white compound X accompanied by emission of light. If the burning ribbon is now placed in an atmosphere of nitrogen, it continues to burn and forms a compound Y. (a) Write the chemical formulae of X and Y. (b) Write a balanced chemical equation, when X is dissolved in water. 5. Aluminium liberates hydrogen gas when reacted with dilute hydrochloric acid, whereas copper does not. Explain why?

Topic	DAY 1-Characteristics of chemical reactions
Class Transaction	40 min each)
Pre-requisite for the course	This topic requires Basic knowledge of chemical reactions which students had already learnt in class VII and VIII
Assessment of qualifying knowledge	Knowledge testing by showing of some chemical reactions by teacher in class
Objective	Student will be able to suggest the changes observed during chemical reactions
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> - A chemical change takes place through a chemical reaction.. <u>SKILLS AND COMPETENCIES</u>- <i>Students would be able to</i> Critically analyse the chemical reaction and identify the change observed
Transaction Methodology (The teacher can use the mentioned techniques, wherever	Transaction would proceed in the following manner- Anticipatory Set: 10 min *Demo by teacher - classroom demonstration on a chemical reaction. * Students observe and justify why the performed reaction is a chemical change * Students also note down the changes which indicate that a chemical

applicable, and can use any other too.)	reaction has taken place. Strategies- Wipro Technique Student -teacher interaction, Think- Pair and Share, group work - collaborative, tabulation, Wipro- G.O.s(web chart, flow chart and compare- contrast matrix) DOL 1, 2, 3 Discussion of topic through Collaborative Learning: <u>15 min</u> <u>(Critical Thinking and Problem Solving)</u> Think, pair share Students in group write reactions suggest other examples in which similar changes are observed Guided practice: <u>10 min</u> Students will write the formulae of the reactants and products Independent Practice: NCERT questions Closure: <u>5 min</u> Involving students in summarizing by asking them to prepare questions based on the topic./A short oral test would be taken to check proper assimilation of the topic discussed.
Resources	Text Book: NCERT text book for Science. Reference Book CBSE Exemplar PPT/Video
Closure	Involving students in summarizing by asking them to prepare questions based on the topic.
Self Study, Home Work, Assignments	Independent Practice NCERT questions
Assessments	Assignment
Topic	DAY 2-Balancing of chemical equation
Class Transaction	40 min each
Pre-requisite for the course	This topic requires basic knowledge of framing chemical formulae which students had already learnt in classes VIII and IX
Assessment of qualifying knowledge	Knowledge testing by asking students to write chemical equations for given reaction
Objective	Students will be able to write formulae of reactants and products followed by balancing the chemical equation.
Learning Outcomes	Students would be able to write the chemical equations for the reactions and balance it.
Transaction Methodology (The teacher can	Transaction would proceed in the following manner- Anticipatory Set: 5 min *Teacher asks questions based on previous day learning

use the mentioned techniques, wherever applicable, and can use any other too.)	Strategies- Wipro Technique Think- Pair and Share, group work - collaborative, tabulation, Wipro- G.O.s(web chart, flow chart and compare- contrast matrix) DOL 1, 2, 3 Discussion of topic through Collaborative Learning: 20 min (Critical Thinking and Problem Solving and collaboration) - Class will be divided into groups of 6 students each. - Each group will discuss the valencies of various cations and anions for framing correct formulae of compounds. - They will be asked to frame formulae of any five compounds which they have read in previous class . - The students will then be helped by facilitator for understanding balancing of equations. The following questions will be asked to check their Guided practice: 10 min. The following questions will be asked to reinforce their understanding: - Write chemical formulae of barium chloride and aluminium sulphate. - Write balanced equation for reaction of nitrogen with hydrogen. - What information is conveyed by a balanced chemical equation. Independent Practice: NCERT questions Closure: 5 min Involving students in summarizing by asking them to prepare questions based on the topic.
Resources	Text Book: NCERT text book for Science. Reference Book CBSE Exemplar DPSG Spiral
Closure	Involving students in summarizing by asking them to prepare questions based on the topic.
Self Study, Home Work, Assignments	Independent Practice: NCERT questions
Assessments	Peer assessment
Topic	Day 3 -Types of chemical reactions
Class Transaction	40 min each)
Pre-requisite for the course	This topic requires basic knowledge of writing balanced chemical equations
Assessment of qualifying knowledge	Knowledge testing by asking questions based on previous day learning
Objective	Students will be able to explain the different types of chemical reactions

	taking place in chemical changes around them.
Learning Outcomes	SKILLS AND COMPETENCIES- Students would be able to develop the ability to analyze and differentiate between combination and decomposition reactions
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Anticipatory Set: 5 min Recapitulation by asking questions based on previous day's learning Strategies- Wipro Technique Think- Pair and Share, group work - collaborative, tabulation, Wipro- G.O.s(web chart, flow chart and compare- contrast matrix) DOL 1, 2, 3 Discussion of topic through Collaborative Learning: 20 min (collaboration and communication) Think, pair share Students in groups of six find the difference between combination and decomposition reaction . They will also give some examples of specific reactions in each category. Teaching strategy – Demo by teacher, Discussion, think pair share, explanation by teacher Guided practice: 10 min Write equations for combination and decomposition reactions Closure: 5 min Summarization by students Independent Practice- NCERT Questions
Resources	Text Book: NCERT text book for Science. Reference Book CBSE Exemplar
Closure	Involving students in summarizing the topic
Self Study, Home Work, Assignments	NCERT questions
Assessments	Quiz
Topic	DAY 4 - Types of chemical reactions (exothermic and endothermic reactions)
Class Transaction	40 min each
Pre-requisite for the course	This topic requires basic knowledge of writing chemical equations
Assessment of qualifying knowledge	Knowledge testing by asking students to write chemical equations for given reaction
Objective	Students will be able to explain the different types of chemical reactions

	taking place in chemical changes around them.
Learning Outcomes	SKILLS AND COMPETENCIES- Students would be able to develop the ability to analyze and differentiate between exothermic and endothermic reactions
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Anticipatory Set: 5 min Recapitulation by asking questions based on previous day's learning Strategies- Rally Robin group work - collaborative, tabulation, Wipro- G.O.s(web chart, flow chart and compare- contrast matrix) DOL 1, 2, 3 Discussion of topic through Collaborative Learning: 20 min (Critical Thinking, collaboration and communication) Rally Robin Teacher will ask questions students in pairs will answer . They will find the difference between exothermic and endothermic reactions. They will also give some examples of specific reactions in each category. Teaching strategy – Discussion, Rally Robin Guided practice: 10 min NCERT Questions Closure: 5 min Summarization by students Independent Practice- NCERT Questions
Resources	Text Book: NCERT text book for Science. Reference Book CBSE Exemplar
Closure	Involving students in summarizing by asking them to prepare questions based on the topic.
Self Study, Home Work, Assignments	Independent Practice: NCERT Questions
Assessments	Questioning

Topic	DAY 5- Different types of decomposition reactions
Class Transaction	40 min each)
Pre-requisite for the course	This topic requires basic knowledge of endothermic reactions
Assessment of qualifying knowledge	Knowledge testing by asking students to write chemical equations for given reaction
Objective	Students will be able to explain different types of decomposition reactions taking place through heat, light and electricity.
Learning	<u>SKILLS AND COMPETENCIES-</u> <i>Students would be able to</i>

Outcomes	effectively interpret the observation and identify the factor responsible for the change
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Anticipatory Set: <u>5 min</u> Recapitulation by asking questions based on previous day's learning Strategies- Wipro Technique Group work - collaborative, Wipro- G.O.s(web chart, flow chart and compare- contrast matrix) DOL 1, 2, 3 Discussion of topic through Collaborative Learning: <u>25 min</u> (Critical Thinking and Problem Solving, collaboration) Number heads together- students will discuss different types of decomposition reactions in their groups. Class will be divided into groups of 6 students each. Groups will be asked to prepare presentation on allotted topics. Each group will be given 4 minutes to give presentation. • Group 1- Thermal Decomposition • Group 2- Photolytic Decomposition • Group 3 - Electrolytic Decomposition • Group 4 -Thermal Decomposition • Group 5- Photolytic Decomposition • Group 6- Electrolytic Decomposition Guided practice: <u>5 min</u> Students will write the chemical equations for the reactions Independent Practice: NCERT Questions Closure: <u>5 min</u> Involving students in summarizing by asking them to prepare questions based on the topic
Resources	Text Book: NCERT text book for Science. Reference Book CBSE Exemplar DPSG Spiral
Closure	Involving students in summarizing by asking them to prepare questions based on the topic.
Self Study, Home Work, Assignments	Independent Practice: NCERT and exemplar questions
Assessments	Oral Test
Topic	DAY 6-Displacement and double displacement reactions
Class Transaction	40 min each
Pre-requisite for the course	This topic requires basic knowledge of reactivity series which students had already learnt in class VIII

Assessment of qualifying knowledge	Knowledge testing by asking students to write chemical equations for given reaction
Objective	Students will be able to explain the term displacement and double displacement reactions and identify differences between them.
Learning Outcomes	SKILLS AND COMPETENCIES- Students would be able to - Critically analyze the chemical reactions and identify them as displacement and double displacement reactions - Answer knowledge, understanding and application based questions on the topic.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Anticipatory Set: 5 min Recapitulation by asking questions based on previous day's learning Strategies- Enactment Wipro Technique, group work - collaborative, tabulation, Wipro-G.O.s(web chart, flow chart and compare- contrast matrix) DOL 1, 2, 3 Discussion of topic through Collaborative Learning: 20 min (Critical Thinking and Problem Solving, collaboration, communication and character) Instructional Input : Collaborative work, students will discuss-Page10 and 11 of NCERT in their groups. Teaching strategy – Class will be divided into groups of 8 students each. Groups will be asked to prepare a play enacting displacement and double displacement. Each group will be given 5 minutes to give presentation. Presentation by groups followed by discussion Guided practice: 10 min Spiral Level- 1 Questions and NCERT Questions Independent Practice: NCERT and exemplar questions Closure: 5 min Muddiest point discussed by the teacher.
Resources	Text Book: NCERT text book for Science. Reference Book CBSE Exemplar
Closure	Summarization by students with the muddiest point discussed by the teacher.
Self Study, Home Work, Assignments	NCERT and exemplar questions

Assessments	Oral Test
Topic	Day 7-Practical
Class Transaction	40 min each)
Pre-requisite for the course	This topic requires basic knowledge of type of reactions
Assessment of qualifying knowledge	Recording of the observations made in lab
Objective	To perform the following reactions: a) Action of water on quicklime b) Action of heat on ferrous sulphate crystals c) Iron nails kept in copper sulphate solution d) Reaction between sodium sulphate and barium chloride solutions and classify them into: a) Combination reaction b) Decomposition reaction c) Displacement reaction d) Double displacement reaction
Learning Outcomes	SKILLS AND COMPETENCIES- Students would be able to have hands on experiment and enhance their ability to make correct observations. .develop the ability to analyze and classify them into different types of reactions
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Anticipatory Set: 5 min Recapitulation by asking questions based on previous day's learning Experimentation, DEAL DOL 1, 2, 3 Discussion of topic through Collaborative Learning: 20 min (Critical Thinking and Problem Solving , collaboration and Character building: Comes prepared to learn and bringing of material on the day of lab visit and working as a team Teaching strategy –DEAL Instructional Input : Teacher will explain the practical, Collaborative work; Students will work in group of three students each and record their observations. Guided practice: 10 min Students will observe and record their observation in tabular form. Closure: 5 min Summarization by students Independent Practice-Students will complete practical in their spirals and

	answer related questions.
Resources	Text Book: NCERT text book for Science. Reference Book
Closure	Involving students in summarizing by asking them to prepare questions based on the topic.
Self Study, Home Work, Assignments	Students will complete practical in their spirals and answer related questions.
Assessments	Observations recorded in the spiral
Topic	DAY 8 Redox reactions
Class Transaction	40 min each
Pre-requisite for the course	This topic requires basic knowledge of writing chemical equation
Assessment of qualifying knowledge	Knowledge testing by asking students to write chemical equations for given reaction
Objective	Students will be able to define the process of oxidation and reduction. They will also relate these terms to changes taking place in their daily life.
Learning Outcomes	SKILLS AND COMPETENCIES- Students would be able to - develop the ability to analyze and differentiate between oxidation and reduction reactions. - Identify oxidizing and reducing agent in the reaction
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Anticipatory Set: 5 min Recapitulation by asking questions based on previous day's learning Wipro Technique Think- Pair and Share, group work - collaborative, tabulation, Wipro- G.O.s(web chart, flow chart and compare- contrast matrix) DOL 1, 2, 3 Discussion of topic through Collaborative Learning: 20 min (Critical Thinking, collaboration and communication) Collaborative work, students will discuss-oxidation reduction in their groups. Pose, pause, pounce and bounce Teacher will prepare a list of question on oxidation and reduction and will ask these questions during discussions Guided practice: 10 min NCERT Questions Closure: 5 min Summarization by students with the muddiest point discussed by the teacher.

	Independent Practice- NCERT and exemplar Questions
Resources	Text Book: NCERT text book for Science. Reference Book CBSE Exemplar DPSG Spiral
Closure	Involving students in summarizing
Self Study, Home Work, Assignments	NCERT and exemplar Questions
Assessments	Oral Test
Topic	DAY 9- Oxidation in day to day life
Class Transaction	40 min each)
Pre-requisite for the course	This topic requires basic knowledge of oxidation reactions
Assessment of qualifying knowledge	Knowledge testing by asking students examples of oxidation in day to day life
Objective	Students will be able to define the process of corrosion and rancidity They will also relate oxidation to changes taking place in their daily life..
Learning Outcomes	SKILLS AND COMPETENCIES- Students would be able to built character and citizenship amongst themselves by discussing / communicating how corrosion of iron is a serious problem and a threat to nation's economy.
Transaction Methodology (The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Transaction would proceed in the following manner- Anticipatory Set: 5 min Recapitulation by asking questions based on previous day's learning DOL 1, 2, 3, 4 Discussion of topic through Collaborative Learning: 25 min (Critical Thinking, collaboration, character and citizenship) Differentiation- The students in a group of 4 will prepare a presentation on oxidation in day to day life and ways to prevent corrosion of iron hence strengthening nation's economy. Guided practice: 5 min NCERT Questions Independent Practice: NCERT Questions Closure: 5 min Involving students in summarizing by asking them to prepare questions based on the topic
Resources	Text Book: NCERT text book for Science.

	Reference Book CBSE Exemplar
Closure	Involving students in summarizing by asking them to prepare questions based on the topic.
Self Study, Home Work, Assignments	NCERT Questions
Assessments	Test
	Closure of chapter by mind mapping and open discussion