

DELHI PUBLIC SCHOOL GHAZIABAD
CLASS – X
LESSON PLAN
CHAPTER 4: Carbon and its Compounds

Unit	CHAPTER 4: Carbon and its Compounds
Class Transaction	Total: 11 periods (approx. 40 min each)
Pre-requisite for the course	This lesson requires previous knowledge of- • Element Carbon, atomic number • Its valency • Formation of bonds • Common names of some chemical compounds
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 • Explain and draw the covalent bonding in carbon/ nonmetals, write names of or draw structures of the given hydrocarbons with 90 % accuracy. • Describe the properties and uses of ethanol, ethanoic acid, soap and detergent with 95 percent accuracy.. • DOL 1, 2, 3, 4
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will able to describe</i> 1. Carbon: tetravalency, catenation 2. Covalent bond 3. Define: homologous series, IUPAC system of nomenclature 4. Properties of chemical compounds <u>SKILLS AND COMPETENCIES</u> - <i>Students would be able to</i> 1. Critically analyse and draw electron dot structures of some simple carbon compound 2. Provide IUPAC names and write structural formulae of the carbon compound. 3. Interact with peers and compare chemical properties of ethanol and ethanoic acid, write equations for chemical reactions and develop critical thinking and collaboration in the process 4. Built character and citizenship amongst themselves by pondering on harmful effects of drinking alcohol and spread awareness on its long lasting harmful effects in society 5. Reason effectively cleansing action of soaps and detergents
Transaction Methodology	Transaction would proceed in the following manner-

(The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	Brain Storming-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. Active learning- One minute paper Group learning-. (Communication, Collaboration) <i>Think, pair and share, students teacher interaction, experimentation</i> Differentiation- (Character, Citizenship) The students in a group of 10 will be presenting a skit on harmful effects of drinking alcohol and bring a positive change in the society. Questioning- Pose, pause, pounce and bounce; <i>Multiple level question</i>- Teacher will prepare a list of questions on different topics and will ask these questions during discussions. (Critical thinking, Communication) Guided practice followed by Independent Practice- NCERT questions to be discussed in the classroom. Techniques 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),
Resources	Text Book: NCERT text book for science Reference Book -CBSE Exemplar 1. Sample papers / last years paper 2. PPT/ Video
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 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> • HOTS • Encouragement for referring other resources <i>For weak students:</i> • Asset Management • Buddy help to be provided • Provide grade-up 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 their understanding 1. Give reasons: a) Carbon does not form ions C^{4+} or C^{4-} ions b) Carbon forms a large number of compounds. c) Covalent compounds have low melting points. 2. Give IUPAC names- i) an alcohol containing 4 carbon atoms ii) an aldehyde containing 3 carbon atoms iii) simplest ketone iv) CH_3CHO v) C_4H_8 3. Draw the structures for the following compounds. (i) Ethanoic acid (ii) Bromopentane 4. What are homologous series? List some important characteristics of homologous series. 5. Complete the following reactions. Also name the final product formed. (a) $CH_3COOC_2H_5 + H_2O \rightarrow$ (b) $CH_3COOH + NaHCO_3 \rightarrow$ (c) $CH_3COOH + C_2H_5OH \rightarrow$ (d) $C_2H_5OH + Na \rightarrow$

Topic	DAY 1-Bonding in carbon
Class Transaction	40 min each)

Pre-requisite for the course	This topic requires basic knowledge of electronic configuration of first 20 elements and octet rule which students had already learnt in class IX
Assessment of qualifying knowledge	Knowledge testing by asking questions based on previous knowledge by teacher in class
Objective	<i>Students will be able to explain Bonding in carbon, covalent bond</i>
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will be able to</i> Define single, double and triple covalent bonds <u>SKILLS AND COMPETENCIES</u>- Students will be able to critically analyse and explain formation of covalent bond in carbon compounds Skills developed- interpretation, reasoning skills 21st century competencies: Critical thinking and problem solving, Collaboration, communication skills
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>10 min One minute paper.</u> *Facilitator asks the given set of questions- Q1- What is the atomic number of carbon? Q2- Write the electronic configuration of carbon. Q3 How does it attain stability? Strategies- Student -teacher interaction, Think- Pair and Share, group work - collaborative, tabulation DOL 1, 2, 3, 4 Discussion of topic through Collaborative Learning: <u>15 min</u> (Critical Thinking and Problem Solving, collaboration) Class will be divided into six groups of 6 students each Teacher asks the students to write electronic configuration of carbon and asks following questions- - How does carbon attain the configuration of the nearest inert gas? - Why does carbon not gain or lose electron like sodium and oxygen do respectively? - What kind of bonding does carbon involve in? Guided practice: <u>10 min</u> Draw electron dot structures to establish formation of bond in molecules of hydrogen gas, oxygen gas and nitrogen gas. Independent Practice: NCERT AND exemplar questions Closure: <u>5 min</u> Involving students in summarizing 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	Independent Practice: NCERT AND exemplar questions
Assessments	Response during activity
Topic	DAY 2-Versatile nature of carbon
Class Transaction	40 min each
Pre-requisite for the course	This topic requires basic knowledge of valency of carbon
Assessment of qualifying knowledge	Knowledge testing by asking questions based on previous knowledge by teacher in class
Objective	Students will be able to describe Versatile nature of carbon
Learning Outcomes	<u>KNOWLEDGE</u>- Students will able to describe Catenation and tetravalency <u>SKILLS AND COMPETENCIES</u>- Students will be able to critically analyse and compare catenation in carbon and silicon. Reason effectively for formation of large number of carbon compounds Skills developed-Listing, compare & contrast, & interpretation , reasoning skills 21st century competencies: Critical thinking and problem solving , Collaboration, communication skills •
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 *Teacher asks questions based on previous day learning Wipro Technique Questioning, group work - collaborative, tabulation, DOL 1, 2, 3 Discussion of topic through Collaborative Learning: 20 min (Critical Thinking and collaboration) Questioning- Multiple level question- Teacher will prepare a list of questions on catenation and tetravalency and will ask these questions during discussions Guided practice: 10 min. Relevant NCERT Questions and NCERT Questions Independent Practice: NCERT and exemplar 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	Independent Practice: NCERT and exemplar questions
Assessments	Observations and responses from activities
Topic	Day 3 –Saturated and unsaturated carbon compounds
Class Transaction	40 min each)
Pre-requisite for the course	This topic requires basic knowledge of different types of covalent bonding and hydrocarbons
Assessment of qualifying knowledge	Knowledge testing by asking questions based on previous knowledge by teacher in class
Objective	Students will be able to explain the term Saturated and unsaturated carbon compounds
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will be able to</i> Draw electron dot structures of simple alkane, alkenes and alkynes <u>SKILLS AND COMPETENCIES</u>- Students will be able to critically analyse and compare Saturated and unsaturated carbon compounds on the basis of their structure, combustion, reactivity and chemical reactions Skills developed- interpretation , reasoning skills 21st century competencies: Critical thinking and problem solving , , Collaboration, communication skills
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 Model making, group work - collaborative, tabulation, DOL 1, 2, 3, 4 Discussion of topic through Collaborative Learning: 20 min (Critical Thinking, collaboration and communication) Class will be divided into groups of 6 students each. Students in group will make model of saturated and unsaturated hydrocarbons by using thermocol balls and sticks and understand bonding Questioning- <i>Multiple level question</i>- Teacher will prepare a list of questions on different topics and will ask these questions during discussions Guided practice: 10 min Relevant NCERT Questions and NCERT Questions Closure: 5 min

	Summarization by students Independent Practice -Students will complete related questions of NCERT
Resources	Text Book: NCERT text book for Science. Reference Book -CBSE Exemplar
Closure	Involving students in summarizing the topic
Self Study, Home Work, Assignments	Independent Practice: NCERT and exemplar questions
Assessments	Observations and responses from activities
Topic	DAY 4 –Functional groups and homologous series
Class Transaction	40 min each
Pre-requisite for the course	This topic requires basic knowledge of hydrocarbons and how to name them
Assessment of qualifying knowledge	Knowledge testing by asking questions based on previous knowledge by teacher in class
Objective	Students will be able to define the terms Functional groups and homologous series
Learning Outcomes	<u>KNOWLEDGE</u> - Students will be able to define the terms Functional groups and homologous series <u>SKILLS AND COMPETENCIES</u> - Students in group will write Functional groups, the prefix or suffix used for them homologous series and their characteristics
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 Discussion of topic through Collaborative Learning: 20 min (Critical Thinking, collaboration and communication) Questioning- Multiple level question- Teacher will prepare a list of questions on Functional groups, the prefix or suffix used for them homologous series and their characteristics and will ask these questions during discussions Guided practice: 10 min Relevant NCERT Questions and NCERT Questions Closure: 5 min Summarization by students Independent Practice -Students will complete related questions of NCERT

	and exemplar
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 and exemplar questions
Assessments	Questioning

Topic	DAY 5-IUPAC Nomenclature
Class Transaction	40 min each)
Pre-requisite for the course	This topic requires basic knowledge of functional groups prefix or suffix used for them
Assessment of qualifying knowledge	Knowledge testing by asking questions based on previous knowledge by teacher in class
Objective	Students will be able to write IUPAC names for carbon compounds
Learning Outcomes	<u>KNOWLEDGE</u>-Students will be able to List the rules for nomenclature write IUPAC names and draw structural formula for carbon compounds <u>SKILLS AND COMPETENCIES</u>- Skills developed- interpretation , reasoning skills 21st century competencies: Critical thinking and problem solving , Collaboration, communication skills
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: 5min Recapitulation by asking questions based on previous day's learning , DOL 1, 2, 3, 4 Discussion of topic through Collaborative Learning: 25 min Wipro Technique Questioning , group work - collaborative, tabulation <u>(Critical Thinking and Problem Solving, collaboration)</u> In groups of 3 to 4 (DOL 3- inductive and deductive reasoning) • students will write the IUPAC names for the given structural formulae. • Students will work on the structures of organic compounds for the names provided. • Students will work in think- pair-square.

	Teacher's role as a facilitator Guided practice: 10 min Relevant NCERT Questions Closure: 5 min Summarization by students Independent Practice -Students will complete related questions of NCERT and exemplar 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 and exemplar questions
Assessments	Observations and responses from activities
Topic	DAY 6-Chemical properties of carbon compounds
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 questions based on previous knowledge by teacher in class
Objective	Students will be able to describe chemical properties of carbon compounds
Learning Outcomes	<u>KNOWLEDGE</u> - <i>Students will be able to write</i> - Balanced chemical equations for different chemical reactions shown by carbon compounds <u>SKILLS AND COMPETENCIES</u>- <i>Students will be able to analyse and compare combustion of saturated and unsaturated carbon compounds</i>
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 one minute paper by asking questions based on previous day's learning DOL 1, 2, 3, 4 Discussion of topic through Collaborative Learning: 20 min (Critical Thinking, collaboration, communication and character) Student -teacher interaction, Think- Pair and Share, group work -

	collaborative - Students in group will discuss chemical properties of carbon compounds and practice writing chemical equation for the same - Teacher students interaction / questioning to check their understanding - Teacher's role as a facilitator Guided practice: 10 min Relevant NCERT Questions Closure: 5 min Summarization by students Independent Practice-Students will complete related questions of NCERT and exemplar
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	Independent Practice: NCERT and exemplar questions
Assessments	Oral Test
Topic	DAY 7- Ethanol
Class Transaction	40 min each)
Pre-requisite for the course	This topic requires basic knowledge of writing chemical equations and uses of alcohol
Assessment of qualifying knowledge	Knowledge testing by asking questions based on previous knowledge by teacher in class
Objective	Students will be aware of uses and harmful effects of alcohol
Learning Outcomes	KNOWLEDGE-Students will be aware of uses and harmful effects of alcohol SKILLS AND COMPETENCIES-Students will built character and citizenship amongst themselves by pondering on harmful effects of drinking alcohol and spread awareness on its long lasting harmful effects in society through nukkad natak Skills developed-Listing, interpretation , reasoning skills 21st century competencies: Creativity and innovation, Collaboration, character, communication skills

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: 20 min (Critical Thinking and Problem Solving, collaboration) The students in a group of 10 will be presenting a skit on harmful effects of drinking alcohol and bring a positive change in the society. (Character, Citizenship) Teacher's role as a facilitator Guided practice: 10 min Relevant NCERT Questions Independent Practice: NCERT and exemplar questions Closure: 5 min Involving students in summarizing 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	Independent Practice: NCERT and exemplar questions
Assessments	Response during activity
Topic	DAY 8-Ethanoic acid
Class Transaction	40 min each
Pre-requisite for the course	This topic requires basic knowledge of properties of acids
Assessment of qualifying knowledge	Knowledge testing by asking questions based on previous knowledge by teacher in class
Objective	Students will be able to describe physical and chemical properties of ethanoic acid
Learning Outcomes	KNOWLEDGE-Students will be able to write chemical equations for reaction define dehydration SKILLS AND COMPETENCIES- Students will be able to compare esterification and saponification Skills developed- compare & contrast, & interpretation, reasoning skills 21st century competencies: Critical thinking and problem solving, Collaboration, communication skills

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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: One minute paper 5 min *Teacher asks questions based on previous day learning DOL 1, 2, 3 Discussion of topic through Collaborative Learning: 20 min Student -teacher interaction, Think- Pair and Share, group work - collaborative, tabulation, (Critical Thinking and collaboration) Guided practice: 10 min. Students in group will discuss chemical properties of ethanoic acid and write equations for esterification and saponification - Teacher students interaction / questioning to check their understanding - Teacher's role as a facilitator Independent Practice: NCERT and exemplar 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	Independent Practice: NCERT and exemplar questions
Assessments	Observations and responses from activities
Topic	Day 9 Practical
Class Transaction	40 min each)
Pre-requisite for the course	This topic requires basic knowledge of properties of acids
Assessment of qualifying knowledge	Knowledge testing by asking questions based on previous knowledge by teacher in class
Objective	To study the following properties of acetic acid (ethanoic acid): 1) Odour 2) Solubility in water 3) Effect on litmus paper
Learning Outcomes	SKILLS AND COMPETENCIES -Students would be able to have hands on experiment and enhance their ability to make correct

	observations. Skills developed-Listing, compare & contrast, & interpretation , reasoning skills 21st century competencies: Collaboration, character, communication skills
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 Technique Experimentation, group work - collaborative, tabulation, Activity 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, Hands on experiment, Discussion and tabulation Instructional Input : Teacher will explain the practical, Collaborative work; Students will work in group of three students each 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 and answer related 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	Independent Practice: NCERT and exemplar questions
Assessments	Peer assessment
Topic	DAY 10– Soaps and detergents
Class Transaction	40 min each
Pre-requisite for the course	This topic requires basic knowledge of properties of ionic and covalent compounds
Assessment of	Knowledge testing by asking questions based on previous knowledge by

qualifying knowledge	teacher in class
Objective	Students will be able to Explain cleansing action of Soaps and detergents
Learning Outcomes	KNOWLEDGE -Students will be able to compare cleansing action of Soaps and detergents SKILLS AND COMPETENCIES - Skills developed- compare & contrast, & interpretation , reasoning skills 21st century competencies: Critical thinking and problem solving , Collaboration, character, communication skills
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 Student -teacher interaction, Think- Pair and Share, group work - collaborative, tabulation, DOL 1, 2, 3 Discussion of topic through Collaborative Learning: 20 min (Critical Thinking, collaboration and communication) - Students in group will discusscleansing action of Soaps and detergents - Group presentation on the topic - Teacher students interaction / questioning to check their understanding r supported by PPT/ Video - Teacher's role as a facilitator Guided practice: 10 min RelevantNCERT Questions Closure: 5 min Summarization by students Independent Practice -Students will complete related questions of NCERT and exemplar questions
Resources	Text Book: NCERT text book for Science. Reference Book - CBSE Exemplar
Closure	Involving students in summarizing
Self Study, Home Work, Assignments	Independent Practice: NCERT and exemplar questions
Assessments	Observations and responses from activities
Topic	Day 11 Practical
Class Transaction	40 min each)
Pre-requisite for	This topic requires basic knowledge of properties of soaps and detergents

the course	
Assessment of qualifying knowledge	Knowledge testing by asking questions based on previous knowledge by teacher in class
Objective	: To study the comparative cleansing capacity of a sample of soap in soft and hard water.
Learning Outcomes	SKILLS AND COMPETENCIES - Students would be able to have hands on experiment and enhance their ability to make correct observations.
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 Discussion of topic through Collaborative Learning: 20 min (Critical Thinking and Problem Solving , collaboration and Character building: Comes prepared to learn and bring material on the day of lab visit and work as a team Teaching strategy – Hands on experiment, Discussion and tabulation Instructional Input : Teacher will explain the practical, Collaborative work; Students will work in group of three students each Guided practice: <u>10 min</u> Students will observe and record their observation in tabular form. Closure: <u>5 min</u> Summarization by students Independent Practice-Students will complete practical and answer related 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	Independent Practice: NCERT and exemplar questions
Assessments	Peer assessment
	Closure of chapter by mind mapping and open discussion