

DELHI PUBLIC SCHOOL GHAZIABAD
CLASS – XI
CONSOLIDATED LESSON PLAN
CHAPTER-6: THERMODYNAMICS

Unit	THERMODYNAMICS
Class Transaction	Total: 10 periods
Pre-requisite for the course	This lesson requires Basic knowledge <i>about the energy changes involved in a chemical reaction/process? Will it occur or not?</i> <i>What drives a chemical reaction/process?</i> <i>To what extent do the chemical reactions proceed?;</i>
Assessment of qualifying knowledge	1. Written test 2. HW notebook
Objective	Students would be able to understand * Explain the terms : system and surroundings; * Discriminate between close, open and isolated systems; * Explain internal energy, work and heat; * State first law of thermodynamics and express it mathematically;
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> 1. calculate energy changes as work and heat contributions in chemical systems; 2. Explain state functions: U, H. 3. Correlate ΔU and ΔH; <u>SKILLS</u>- <i>Students would be able to</i> 1. Understand the different kind of enthalpies Solve problems based measure experimentally ΔU and ΔH; define standard states for ΔH; calculate enthalpy changes for various types of reactions; 2. state and apply Hess's law of constant heat summation; differentiate between extensive and intensive properties; define spontaneous and nonspontaneous processes; 3. Reasoning questions based entropy and enthalpy 4. Solve questions based on Hess's law,.Gibbs energy and internal energy
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>Communication and brainstorming:</i> <i>Students develop effective communication skills and learn to put across their views.</i>

	<i>Introduction of the topic-</i> ppt and Digital Content would be made by students <i>Collaboration:</i><i>Students learn to work in collaboration to achieve a common goal. They learn to manage time and divide and delegate work and responsibilities.</i> <i>Creativity and innovation</i> <i>Students use the knowledge given in class and create projects and models and perform research to give innovative solutions to the problem studied. Guided practice followed by Independent Practice- NCERT questions to be discussed in the classroom. : Helps students to think critically and solve the given problem</i> <i>Guided practice followed by Independent Practice- NCERT questions to be discussed in the classroom.</i> Techniques to be used: Daily Practice Problem MCQ Peer Assessment <i>Character and citizenship:</i> <i>Group discussion helps to develop interpersonal skills, respecting and valuing views of others</i> HOTS Any Other						
Resources	Text Book: NCERT text book for Mathematics Reference Book 1. CBSE Exemplar 2. DPSG Spiral 3. Previous year questions						
Self Study, Home Work, Assignments	Independent Practice: Students would do the given questions in their H.W. notebooks as mentioned in the monthly planner. 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	<table> <tr> <td>3UNIT TESTS</td> <td>30,35,35 Marks</td> </tr> <tr> <td>HALF YEARLY EXAMINATION</td> <td>70 Marks</td> </tr> <tr> <td>ANNUAL EXAMINATION</td> <td>70 Marks</td> </tr> </table>	3UNIT TESTS	30,35,35 Marks	HALF YEARLY EXAMINATION	70 Marks	ANNUAL EXAMINATION	70 Marks
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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 higher scoring students:</i> • Spiral Level 3 questions to be done • Encouragement for referring other resources <i>For lower scoring students:</i> • Spiral Level 1 to be completed • Peer help to be provided • Provide grade-up classes(PCC) <i>For differently abled students:</i> • Ignore spelling mistakes and formulae,if not written • Call parents at regular intervals • Provide grade-up classes • Encourage and motivate them at every level.
Marks	The weightage would be given by CBSE.

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CLASS XI
LESSON PLAN
CHAPTER – 6
THERMODYNAMICS(Based on DOL)

Anticipatory Set: Facilitator introduces the topic **Thermodynamics**

Objective:

- Given questions based on the topic learners will be able to **calculate energy changes as work and heat contributions in chemical system.**
- To make students able to solve questions based on the topics to be discussed

Techniques to be used:

- Peer Assessment
- Quiz
- Case Study
- PPT

Materials required and Teaching Aids: Smart Class Modules, blackboard, chalk, duster, NCERT book

Strategy

Student – teacher interaction, collaborative learning, independent practice

DAY 1

- The students will be shown a PPT and will be made aware of **system, surrounding, work and heat.**

- The students will be told about the **first law of thermodynamics**.

GUIDED PRACTICE

The students will solve selected questions from NCERT book of ex. 6.1 to 6.4 in their notebook in the class with the help of their teacher. .(CRITICAL THINKING)

SUMMARIZE AND CHECK FOR UNDERSTANDING

Some questions will be asked based on the day's teaching and doubts will be cleared.

INDEPENDENT PRACTICE – Students will do the leftover questions of ex in their Assignment notebook

PEER LEARNING: Student will help weak student to do problem solving questions (CITIZENSHIP)

DAY 2

- **Work done in reversible and irreversible process, enthalpy change.**
- Questions from NCERT will be discussed along with the discussion of solved examples given.

GUIDED PRACTICE

The students will solve selected questions from NCERT book of exercise in their notebook in the class with the help of their teacher. .(CRITICAL THINKING)

SUMMARIZE AND CHECK FOR UNDERSTANDING

Some questions will be asked based on the day's teaching and doubts will be cleared.

INDEPENDENT PRACTICE – Students will do the leftover questions of ex 6.7 to 6.8 in assignment copy

PEER LEARNING: Student will help weak student to do problem solving questions (CITIZENSHIP)

DAY 3

- **Extensive and intensive properties, heat capacity, relationship between C_p and C_v , measurement of ΔU and ΔH .**
- The exercise would be undertaken questions from NCERT will be discussed along with the discussion of solved examples given.

GUIDED PRACTICE

The students will solve selected questions from NCERT book of exercise in their notebook in the class with the help of their teacher. .(CRITICAL THINKING)

SUMMARIZE AND CHECK FOR UNDERSTANDING

Some questions will be asked based on the day's teaching and doubts will be cleared.

INDEPENDENT PRACTICE – Students will do the left over questions of exercise in their assignment notebook.

PEER LEARNING: Student will help weak student to do problem solving questions (CITIZENSHIP)

DAY 4

- **Enthalpy change of a reaction, Enthalpy change during phase transformation, Thermochemical equation, Hess's law of constant heat summation.**

- The exercise would be undertaken , questions 6.8 to 6.11 from NCERT will be discussed along with the discussion of solved examples given.

GUIDED PRACTICE

The students will solve selected questions from NCERT book of exercise in their notebook in the class with the help of their teacher. .(CRITICAL THINKING)

SUMMARIZE AND CHECK FOR UNDERSTANDING

Some conceptual questions will be asked based on the day's teaching and doubts will be cleared.

INDEPENDENT PRACTICE – Students will do the leftover questions of exercise in their assignment notebook.

PEER LEARNING: Student will help weak student to do problem solving questions (CITIZENSHIP)

DAY 5

- **Standard enthalpy of combustion, enthalpy of atomization, bond enthalpy, enthalpy of solution, lattice enthalpy**
- The exercise would be undertaken; questions from NCERT will be discussed along with the discussion of solved examples given.

GUIDED PRACTICE

The students will solve selected questions from NCERT book of exercise in their notebook in the class with the help of their teacher. .(CRITICAL THINKING)

SUMMARIZE AND CHECK FOR UNDERSTANDING

Some conceptual questions will be asked based on the day's teaching and doubts will be cleared.

INDEPENDENT PRACTICE – Students will do the leftover questions of exercise in their assignment notebook.

DAY 6

- **Spontaneity, enthalpy a criterion for spontaneity, entropy and spontaneity**
- The exercise would be undertaken , questions from NCERT will be discussed along with the discussion of solved examples given.

GUIDED PRACTICE

The students will solve selected questions from NCERT book of exercise in their notebook in the class with the help of their teacher. .(CRITICAL THINKING)

SUMMARIZE AND CHECK FOR UNDERSTANDING

Some questions will be asked based on the day's teaching and doubts will be cleared.

INDEPENDENT PRACTICE – Students will do the left over questions of exercise in their assignment notebook.

PEER LEARNING: Student will help weak student to do problem solving questions (CITIZENSHIP)

DAY 7

- **Gibbs energy and spontaneity**
- The exercise would be undertaken , questions from NCERT will be discussed along with the discussion of solved examples given.

GUIDED PRACTICE

The students will solve selected questions from NCERT book of exercise in their notebook in the class with the help of their teacher. .(CRITICAL THINKING)

SUMMARIZE AND CHECK FOR UNDERSTANDING

Some questions will be asked based on the day's teaching and doubts will be cleared.

INDEPENDENT PRACTICE – Students will do the left over questions of exercise in their assignment notebook.

PEER LEARNING: Student will help weak student to do problem solving questions (CITIZENSHIP)

DAY 8

- **Spontaneity in terms of entropy change**
- **Entropy change during phase transformation**
- The exercise would be undertaken , questions from NCERT will be discussed along with the discussion of solved examples given.

GUIDED PRACTICE

The students will solve selected questions from NCERT book of exercise in their notebook in the class with the help of their teacher. .(CRITICAL THINKING)

SUMMARIZE AND CHECK FOR UNDERSTANDING

Some questions will be asked based on the day's teaching and doubts will be cleared.

INDEPENDENT PRACTICE – Students will do the left over questions of exercise in their assignment notebook.

PEER LEARNING: Student will help weak student to do problem solving questions (CITIZENSHIP)

DAY 9

- **Effect of temperature on the spontaneity of a process**
- The exercise would be undertaken , questions from NCERT will be discussed along with the discussion of solved examples given.

GUIDED PRACTICE

The students will solve selected questions from NCERT book of exercise in their notebook in the class with the help of their teacher. .(CRITICAL THINKING)

SUMMARIZE AND CHECK FOR UNDERSTANDING

Some questions will be asked based on the day's teaching and doubts will be cleared.

INDEPENDENT PRACTICE – Students will do the left over questions of exercise in their assignment notebook

PEER LEARNING: Student will help weak student to do problem solving questions (CITIZENSHIP)

DAY 10

- **Gibbs energy change and equilibrium**
- **Relation between free energy change and equilibrium constant of reaction**
- The exercise would be undertaken , questions from NCERT will be discussed along with the discussion of solved examples given.

GUIDED PRACTICE

The students will solve selected questions from NCERT book of exercise in their notebook in the class with the help of their teacher. .(CRITICAL THINKING)

SUMMARIZE AND CHECK FOR UNDERSTANDING

Some questions will be asked based on the day's teaching and doubts will be cleared.

INDEPENDENT PRACTICE – Students will do the left over questions of exercise in their assignment notebook

PEER LEARNING: Student will help weak student to do problem solving questions
(CITIZENSHIP)