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| **School of Pedagogical Sciences (SPS)**  **M.G University Kottayam as a part of Ph. D Programme**  Research Scholar  **: Shanavas K.E**  Supervising Teacher **: Dr Sajna Jaleel Professor SPS** |
| **Action Script : E Content Lesson based on CDM 2**  Name of Teacher**:** Shanavas K.E Standard: XI Science  Subject: Chemistry Strength: 60  Topic: Thermodynamic Terms Time: 6 minutes Chapter: 6 Thermodynamics |

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| Audio | Video | Tg- Lg Activity | Phases of CDM |
| **My Dear Students,**  Welcome to the world of Chemistry. Today I focus your attention on Chapter 6 Thermodynamics, an important topic of physical chemistry, which can be studied in a simple way.  In this E Content Lesson, we shall learn about important Thermodynamic Terms  Have you been enjoyed various chemical reactions in the chemistry lab?  Let us start with an experiment  Have you observed the colour of the reaction?  What is the colour of KMnO4?  Purple or Violet  Can you give the Chemical name of Caustic Soda?  NaOH Sodium Hydroxide  What is the Colour change formed when we add mixture of NaOH and Sugar to KMnO4 Solution ?  The Colour of the mixture slowly changes from Violet to Green, then Blue, Yellow and Pale Brown.  How this colour change happened?  KMnO4 (+7) Violet  K2MnO4 (+6) Green  K3MnO4 (+5) Green  MnO2  (+4) Brown/Yellow  That is Oxidation State of Maganese changes from +7 to +4 colour changes  In this Experiment, What is the system and Surroundings?  The Experiment between KMnO4, NaOH and Sugar in a beaker is the system  Can you define System?  System is the part of universe which is under investigation  Can you define Surroundings?  The part of universe other than the system is called Surroundings ie Outer area of the system ie Outside the Boundary of the beaker  What is Boundary?  The wall which separates System and Surroundings.  In the Experiment, the reaction mixture (KMnO4 + NaOH + Sugar) constitute the system.  The wall of Beaker is the Boundary.  The everything else other than system is the Surroundings  What is Universe?  Universe is the sum of the system and Surroundings  Can you Classify System?  Open System, Closed System  Isolated System | Teacher presents  Video presentation of chemical reaction of KMnO4 solution, Sugar and Caustic Soda solution  Image of KMnO4(Slide)  Image of NaOH (Slide)  Slide  Slide  Slide  Slide  Slide  Slide  Slide    Slide Image of Open system Hot Tea in a Cup | Gaining the attention to the Objectives  Audio-Video input  Presentation of Slides  Audio-Video input  Audio-Video input  Entering into the content  Developing the content  Audio-Video input | **Phase1**  **Confrontation with the stage relevant task**  Establish Rapport with the students  Presents a Puzzling Problem  Insisting to think  Elicit students Responses  Ask questions related to Concepts  Seeks Probing  **Phase II**  **Inquiry**  Elicit Student’s Responses  Seeks Reasoning  Seeks Justification  Offer Counter Suggestions  Give Cues  Elicit student’s responses |
| What is Open System?  A System which can exchange Matter as well as Energy with surrounding.  The Example is Hot Tea in a Cup  What is Closed System?  A System can exchange energy but no Matter with Surrounding  The Example is Hot Tea in a Closed Jar  What is Isolated System?  A System can neither exchange Matter nor Energy with Surroundings  The Example is Hot tea in a Steel lined Thermoflask    Dear Students, I think you all have a Clear idea about Thermodynamic Terms: System, Surroundings and Types of System: Open System, Closed System and Isolated System.  Then we can do an Assignment  Give an Example of Closed System using a Chemical reaction in Thermodynamics?  The Example is Calcination of CaCO3 taken in a Sealed Tube. On Heating CaCO3 Decomposes into Cao and CO2. However, CO2 cannot escape and remains trapped in the Bulb.  Thank you all  We will see the Next E-content Lesson 3 | Slide  Image of Hot tea in a Closed Jar  What is a system in engineering – x-engineer.org  Slide  Image of Hot Tea in a steel linedThermoflask  What is a system in engineering – x-engineer.org  Slide  Picture of Calcination of CaCO3 in a Sealed Tube  Slide  Thank you | Audio-Video input  Audio-Video input  Time- gap Online Assignment  Audio-Video input | Seeks Justification  **Phase III**  **Transfer**  Present a  related Task  Probes Reasoning  Seeks Justification  Accommodation of new learning experiences leading to ability to apply in different learning situations. |