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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 8**  Name of Teacher**:** Shanavas K.E Standard: XI Science  Subject: Chemistry Strength: 59  Topic: Extensive properties, Intensive properties and internal energy change ∆U as a state function. Time: 6 minutes Chapter: Thermodynamics | | | |
| Audio | Video | Tg-lg activities | Phases of CDM |
| Hello Plus One Students,  Welcome to the world of plus one chemistry. chapter 6 TD This is E content Lesson 8.  Today I focus up on Thermodynamic properties of the system: Extensive properties, Intensive properties and Internal energy change ∆U as a state function.  State whether following Thermodynamic parameters namely heat (q) and work (w) is state function or path function.  Heat is a path function because it follows path and heat transfer is taking place, there is some change in temperature in system as well as in surroundings.  Work done on the system and work done by the system depends on path followed. Hence it is a path function.  q + w is a state function or path function?  Can you give the equation of Ist law of T.D?  ∆U = q + w  What is ∆U?  Internal energy change. It is the sum total of heat and work. ∆U depends on the initial state ∆U1 and final state ∆U2 of the system.  Both q and w are not state function.  but ∆U = q + w is a state function. Can you explain?  Let ∆U1 be increase in internal energy from A to B by path I and let ∆U2 be decrease in internal energy in moving from B to A by path II. ∆U1 is greater than ∆U2. In completing the cycle, a certain amount of internal energy has been created because two values are not same. But it is not true according to 1st law of T.D, because the system returned to its orginal position and no such energy is expected to created.  That is ∆U2 cannot be different from ∆U1. ∆U does not change with change in the state of a system.  That is, U depend on initial and final state of the system and not upon how the system attains that state.  Thus, U is a state function.  Is U being an exensive or intensive property?  Extensive property.    Define Extensive property?  Extensive property is a property whose values depend upon the quantity or size of matter present in the system.  That is, it depends or related to the mass of the system.  Is extensive property in which system is divided?  Yes  The value of extensive property for an overall system is the sum of its values for the parts into which the system is divided. (Additive nature)  Is extensive property depend  on size?  Yes  It depends on the size or extent of the system.  Is extensive property can change with time?  Yes  The Extensive property of a system can change with time.  Can all Thermodynamic function ∆U, ∆H, ∆S ∆G are extensive properties?  Yes  As entropy change with the size of the system. Hence it is an extensive property  Can you define intensive property?  It is independent of mass.  It is independent of size or extent of a system.  It can vary from place to place within the system at any moment.  Intensive properties are not additive in nature.  Intensive properties may be function of both position and time.  Can you example of intensive property?  T, P, density, concentration, viscosity, refractive index, S.T, m.p, b.p, specific heat capacity.  The melting point of substance is not related to size and amount.  **Time gap online assignment**  All specific properties are intensive property. why?  Because they exist at a point.  It is constant throughout the system.  The examples are specific heat capacity, molar volume. | Teacher presents  Slide  Thermodynamic properties of the system. Extensive and intensive properties.  ∆U change in Internal energy as a state function  Slide  Statement related to path function and examples.  Heat(q), work (w).  Slide  q + w is a state function or path function.  Slide    Slide  Both q and w are not state functions. but ∆U = q + w is a state function.  Slide  Reasoning statement related to internal energy change.  ∆U is a state function.  Slide  Is U being an extensive or intensive property  Slide    Since d = m/v  m/2 = m/v  v/2  No division. The ratio of two extensive becomes intensive property.  Internal energy U enthalpy H, entropy S, Free energy G are all Thermodynamic properties. Hence these are Extensive properties.  Slide  Question  Define Intensive properties  Slide  Statement based on intensive properties.  Slide  Examples of intensive property  Slide  Question  All specific properties are intensive property. Explain?  Slide  Explanations and examples of Intensive properties.  Slide  Thank you. Learn well. Designate a study area. Get Organized. Revise E-content lesson. Enjoy chemistry. | Gaining the attention to the objectives  Presentation of slides  Audio video input  Audio-video input enter into the content.  Developing the content  Asking questions.    Audio-video input giving more applications and problems.  Audio-video input giving more explanations.  Audio-video input giving examples  Evaluate and assess the content. | **Phase 1**  Establishes rapport with the students.  Confrontation with stage relevant task  Insisting to think.  **Phase II**  Inquiry  Elicit student’s responses.  Probes reasoning  Seeks justification.  Seeks reasoning  Elicit student’s responses.  **Phase III Transfer**  Seeks justification.  Probes reasoning.  Giving perceptual cues or hints.  Seek  Justification results in Assimilation.  Offer counter suggestion  Gives cues  Probes reasoning.  Accommodation  of new learning experience leading to ability to apply in different learning situations. |