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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 T 10**  Name of Teacher**:** Shanavas K.E Standard: XI Plus One  Subject: Chemistry Strength: 60  Topic: Lattice Enthalpy and Born Haber cycle Time : 5 minutes Chapter: 6 Thermodynamics | | | |
| Audio | video | Tg-lg activities | Phases of CDM |
| Dear students, Good Morning All,  Welcome to the World of Chemistry. Chapter 6 Thermodynamics, T.D. Enjoy and Learn chemistry in a Simple way. This is the E Content Lesson based on CDM-10.  We will learn about Lattice Enthalpy and Born Haber cycle.  Students, can you define Lattice enthalpy of an Ionic Solid NaCl.  What is Born Haber cycle?  Students, can you convert metallic sodium to gaseous sodium?  How Cl2 molecule is converted into Cl atom  Students, will you Convert NaCl(g) into Na+(g)  Can you convert gaseous chlorine atom into gaseous anion.  Then what is Lattice Enthalpy, LE.    What is Born Haber cycle?  **Born Haber Cycle - Definition, Examples, Problems, Diagrams**  **Time gap online Assignment**  What is the application of Born Haber cycle?  Give one limitation of Born Haber cycle?  Which is not involved in Born Haber cycle?  Which ionic compound has highest Lattice enthalpy   1. MgO Vs NaF 2. NaF Vs KCl | Teacher presents  Slide  Lattice enthalpy and Born Haber cycle  Slide  Definition of Lattice Enthalpy  Lattice Enthalpy is defined as the amount of energy released when one mole of ionic solid NaCl is formed by close packing of gaseous ions, Na+ (g) Cl (g)  Na+(g) + Cl(g) → l NaCl(s) +U  Where U represent Lattice Enthalpy, LE  Slide  Born Haber Cycle  In 1919 Born and  Haber developed a simplified method, to correlate Lattice enthalpy of ionic crystals to other thermodynamic data.  This is primarily based on Hess's law.  Slide  Yes, Sublimation  It is the process by which solid convert into gas.  Na(s) +S → NaCl (g)  Slide  Dissociation energy  D.  Cl2(g)+D → 2Cl(g)  ½ Cl2(g) +½D→ Cl(g)  Slide  Yes of course, It is IE.  Ionization Enthalpy is the energy required to remove an electron from gaseous atom  Na(g) + IE→ Na+(g) + e-  Slide  Yes. It is Electron Gain Enthalpy. EGE. when gaseous atom accepts an electron to form monovalent gaseous anion by releasing energy. That is EGE  Cl(g) + e-→ Cl- + EGE  Slide  In NaCl, gaseous Na+, Cl-ions of opposite charges attract each other to form I mol of NaCl by releasing energy. That is LE  Na(g) + Cl(g) → 1NaCl +U  This energy changes ∆ Hf  is shown as in a cycle.  Slide  Born Haber cycle  ∆Hf = S +1/2 D + IE + EGE + U  Thus, Enthalpy of formation is the sum of energy changes S, D, IE, EGE, U according to Hess’s law  Slide  Born Haber cycle is mainly used to calculate LE of ionic crystals  Slide  Examples  LE of l mol of NaCl, MgO can be calculated  Slide  Limitation of Born Haber cycle.  It can apply only to fully ionic solid such as certain Alkali Halides.  Slide  Electronegativity cannot be found using Born Haber cycle  Slide  Higher charge smaller radii will result in Higher LE   1. MgO   Mg2+Higher charge, smaller radii, then Higher LE.   1. NaF both Na+ andK+ same charges but Na is in smaller radii. Hence NaF has higher LE   Slide  Thank you, Students.  Revise E Content Lesson.  Learn Well.  Learn chemistry in a simple way.  Enjoy Chemistry. | Gaining the attention to the objectives  Presentation of Slide  Audio- Video input entering into the content  Audio- Video input giving statement and equations.  Developing the content  Asking questions  Audio-Video input giving more applications and problems  Audio –Video input giving more examples  Asking Questions  Audio-video input giving statement or definition    Presentation of slides  Presentation of slides.  Evaluate and assess the content  Asking questions.  Audio-Video input giving more applications and problems. | Phase I  Establishes rapport with the students.  Confrontation with stage relevant task.  Presents a puzzling problem.  Elicit student’s responses.  Insisting to think  **Phases II**  Inquiry  Seek reasoning  Giving perceptual cues or hints.  Offer counter suggestions.  Seeks justification results in assimilation  Insist to think  Seeks justification result in assimilation and accommodation.  Elicit student’s responses.  Probes reasoning  Offer counter suggestions  Accommodation of new learning experience leading to ability to apply in different learning situations    Elicit students’ responses  Insist to think  Probes reasoning  Seeks justification results in Assimilation and Accommodation. |