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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 5**  Name of Teacher**:** Shanavas K.E Standard: XI Science  Subject: Chemistry Strength: 59  Topic: Formal charge and calculations. Time : 6 minutes Chapter: Chemical Bonding and Molecular structure | | | |
| Audio | video | Tg-lg activities | Phases of CDM |
| Dear students, Good Morning All,  Welcome to the world of Chemistry: Chapter 4 Chemical Bonding and Molecular Structure. This is the E-Content Lesson based on CDM 5. In this E-content Lesson, we have to learn formal charge and its calculations.  What is formal charge?  Can you define formal charge?  In the case of polyatomic ions, the net charge is possessed by the ion as a whole and not by a particular atom.  It is however, feasible to assign a formal charge on each atom.  How will you express formal charge?  Can you give the equation of formal charge?  Let us calculate the formal charge on oxygen in ozone, O3  In ozone, oxygen has 6 valence electrons. Oxygen 1 and 2 shares its two valence electrons to complete the octet. It contains one double bond. Two covalent bonds. Oxygen 1 contributes or donate a pair of electrons to oxygen 3. Hence it is a Co-ordinate bond  Formal charge on Ozone as  **Time gap online Assignment**  Calculate FC on S in HSO4 -ion    Explain the advantages of Formal charge? | Teacher presents  Audio-video input  Slide  definition  Formal charge is defined as the difference between the number of valence electrons of that atom in an isolated or free state and the number of electrons assigned to that atom in the Lewis structure.  Slide  FC = [(total valence electrons in free atom) – (total LP electrons) – 1/2 (total BP electrons)]  F C = V – L – ½ S  Where V is the total valence electrons. L is the total LP electrons. S is the total BP electrons.  Slide  FC on the central O atom marked 1 = (V- L- 1/2 S) = 6 – 2 - 1/2 (6) = +1  FC on the end O atom marked 2= 6-4-1/2 (4) = 0  FC on the end O atom marked 3 = 6 - 6- 1/2 (2) = -1  Calculate formal charge on each oxygen atom of ${{O}_{3}}$ molecule and  write its structure with formal charges - CBSE Class 11 Chemistry - Learn  CBSE Forum  Slide  HSO4- Lewis Structure in 6 Steps (With Images)  F.C on S = 6 – 0 - 1/2 (12) = 6 - 6 = 0  Slide  To get some idea about the stability of the structure  The structure which has smallest FC on its atoms is associated with lowest energy and thus maximum stable.  Thank you. Explore and solve the problems at your own pace. Learn well. | Gaining the attention to objectives  Presentation of slides  Asking questions  Presentation of slides.  Developing the content.  Audio-video input giving equation of Formal charge  Audio-video input giving equation and structure of Ozone, O3  Audio-video input giving more applications and problems.  Evaluate and assess the content.  Asking questions | **Phase 1**  Confrontation with stage relevant task  Establishes rapport with the students.  Presents a puzzling problem?  Insisting to think  **Phase II**  Inquiry  Probes reasoning  Elicits students’ responses  Give perceptual cues or hints  **Phase III**  Transfer  Seeks justification results in Assimilation  Offer counter suggestion.  Accommodation of new learning experience leading to ability to apply in different learning situations. |