**EMERALD ROYAL INTERNATIONAL SCHOOL, MPAPE ABUJA**

**LESSON PLAN AND NOTE FOR WEEK 4 ENDING 26TH MAY, 2023**

**TERM: THIRD**

**WEEK : 4**

**DATE: 22ND - 26TH MAY, 2023**

**SUBJECT : CHEMISTRY**

**TOPIC : OXIDATION( REDOX REACTION)**

**SUB- TOPIC : 1. meaning of redox reaction.**

1. **Steps in Balancing of redox reaction.**
2. **Examples of balanced redox reaction.**

**PERIOD: 1ST**

**TIME : 8: 10 - 8 :50**

**DURATION:**  **40 minutes**

**CLASS: SS2**

**NUMBER IN CLASS:**  **3**

**AVERAGE AGE: 14 years**

**SEX: mixed**

**LEARNING OBJECTIVES: By the end of the lesson, the students should be able to;**

1. define redox reaction.
2. State the steps in balancing redox reaction.
3. Balance a redox reaction.

**RATIONALE:** The students should understand the balancing of redox reaction.

**PREVIOUS KNOWLEGDE:** The student have been taught oxidizing and reducing agents.

**INSTRUCTIONAL MATERIALS:** A flash card showing balanced redox reaction.

**REFERENCE MATERIALS:** New school Chemistry for Senior Secondary Schools by Osei Yaw Ababio .

|  |  |  |  |
| --- | --- | --- | --- |
| **STEPS** | **TEACHER’S ACTIVITIES** | **STUDENTS’ ACTIVITIES** | **LEARNING POINTS** |
| **INTRODUCTION** | The teacher introduces the lesson by reviewing the previous lesson. | The students were active. | To arouse the students interest. |
| **PRESENTATION**  **STEP 1** | The teacher defines redox reaction. | The students pay attention. | To keep them focus for better understanding. |
| **STEP 2** | The teacher the steps in balancing redox reaction and asks the students to repeats after her. | The students repeat after her. | To encourage retention ability. |
| **STEP 3** | The teacher balanced redox reaction . | The students pay attention. | To keep them focus for better understanding. |
| **BOARD SUMMARY** | **REDOX REACTION AND BALANCING**  **REDOX REACTION**  Redox reaction is a reaction in which both  reduction and oxidation take place  simultaneously.  Since oxidation and reaction take place  simultaneously, the half-cell equation for  oxidation and reduction can be written  separately and thereafter balanced.  **Steps in Balancing Redox Reaction**  i. Write down the oxidizing and the reducing  agent  ii. Write the half equation for oxidation and  reduction.  iii. Balance the atoms and charges for each  half equation by:  • Adding appropriate numerical coefficients  • Placing the correct number of H2O, H+ or  OH- on the appropriate side of the equation  if necessary  iv. Adding the correct number of electrons:  • On the right-hand side for oxidation-half  equation  • On the left-hand side for reduction-half  equation  v. Ensure that the electron loss in the  oxidation half-equation is balanced by the  electron gain in the reduction half-equation.  vi. Combine the half equation to eliminate the  electrons and get the overall redox  equation.  **Example 1**  Balance the following equations by half-reaction  method.  1. Fe + Ag+ → Fe2+ + Ag(s)  Write a balanced ionic equation for the redox  reaction between acidified potassium  tetraoxomanganate (VII) and iron (II)  tetraoxosulphate (VI).  Solution  In this reaction , the tetraoxomanganate VII,  MnO4 - , ion in reduced to manganese II ion,  Mn2+  MnO4 - → Mn2+  MnO4 - + 8H+ → Mn2+ + 4H2O +  MnO4 - + 8 H+ + → Mn2+ + 4H2O + 5e- ----1  Fe2+ → Fe3+ e- -------2  Multiplying equations 1 by 1 and equation 2 by  5, we have  5Fe2+ → 5Fe3+ 5e  MnO4 - + 8H+ + 5e- + → Mn2+ + 4H2O  5Fe2+ + MnO4 - + 8H+ → Mn2+ + 5Fe3+ +  4H2O  Example 2  By the use of half –reaction equation, balance  the following ionic equations:  Zn + Ag + → Zn2+ + Ag  Solution  Oxidation half equation  Zn → Zn2+ + 2e- …….. 1  Reduction half equation  Ag + + e- → Ag …….. 2  Multiplying equation 1 by 2 and  equation 2 by 1, we have  2Ag + + 2e → 2Ag  Zn → Zn2+ + 2e  2Ag + + Zn → 2Ag + Zn2+  Example 3  Balance the ionic equation below  Fe2+ + Cr2O7 2- → Cr3+ + Fe3+ in acidic medium  Solution  Oxidation half equation  Fe2+ → Fe3+ + e-……. 1  Reduction half equation  Cr2O7 2- → Cr3+  Adding of 7H2O to the right-hand side and  balancing of the atoms  Cr2O7 2- → 2Cr3+ + 7 H2O  Addition of the correct number of hydrogen ion  at the left-hand side since the reaction is in a  basic medium  Cr2O7 2- + 14H+ → 2Cr3+ + 7 H2O  Addition of the correct electrons/ charge  balancing  Cr2O7 2- + 14H+ + 6e- →2 Cr3+ + 7  H2O………….2  +12 +6  Multiplying equation 1 by 6 and equation 2 by 1,  we have  6Fe2+ → 6Fe3+ + 6e  Cr2O7 2- + 14H+ + 6e- →2 Cr3+ + 7 H2O  6Fe2+ + Cr2O7 2- + 14H+ → 6 Fe3+ + 2Cr3+ +  7H2O | The students ask question for clarification. | To create room for slow learners. |
| **EVALUATION** | The teacher evaluates the students with the following questions;   1. Define redox reaction. 2. State the steps in balancing of redox reaction. | The students attempt the questions. | To ascertain their level of understanding. |
| **CONCLUSION** | The teacher concludes by copying note on the board. She checks and marks the note. | The students copy the note into their note books. | For future use. |
| **HOME WORK** | Write short note on the following;   1. Reversible reaction. 2. Thermal reaction. 3. Oxidation reaction. | The students did their assignment and submit for marking and correction. | To encourage the students to study at home. |



10/5/2023

Principal Head Instuctor