**EMERALD ROYAL INT’L SCHOOL**

**LESSON PLAN/NOTE FOR WEEK 2 ENDING: 12TH MAY, 2023**

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| **Term** | 3rd |
| **Week** | 2 |
| **Date** | 12/05/2023 |
| **Class** | SSS 2 |
| **Subject** | Physics |
| **Topic** | Electric field 1 |
| **Sub-topic** | Electric circuit |
| **Period** | 3 |
| **Time** | 09:20-09:55 |
| **Duration** | 35minutes |
| **Number in class** | 2 |
| **Average age** | 14years |
| **Sex** | Mixed |
| **Specific objectives** | By the end of the lesson, the students should be able to:   1. State ohm’s law. 2. List and explain the factors affecting electrical resistance. 3. Solve simple examples involving resistivity of a body. |
| **Rationale** | To enable the students understand conduction through materials. |
| **Previous knowledge** | Students should have been taught on electric circuit |
| **Instructional aid** | One guide sheet for each student, a cell, an ammeter, a voltmeter, plastic, copper wire, a science notebook and a science textbook. |
| **Reference** | * M.W. Anyakoha. New school physics for secondary schools. Africana first publishers PLC. page 74-88 * P.N. Okeke. Macmillan Senior Secondary Physics. Pearson. Page 44-57 |

**LESSON DEVELOPMENT**

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| **STEPS** | **TEACHER’S ACTIVITIES** | **STUDENTS’ ACTIVITIES** | **LEARNING POINTS** |
| **Introduction** | The teacher introduces the lesson by explaining that as a result of many experiments conducted by George Simon Ohm, in which he sought to investigate the relationship between the current passing through a wire and the potential difference (p.d) between the ends of the wire, this German Scientist discovered a linear relationship between such a current and the potential difference, the relationship is now known as ohm’s law. | The students differentiates between potential difference and electromotive force. | To give the students a rudimentary understanding ohm’s law |
| **Step I** | *Ohm’s law*  Ohm’s law states that the current flowing through a metallic conductor (e.g wire) is directly proportional to the potential difference across its end, provided that temperature and other physical conditions of the conductor are kept constant.  Mathematically, ohm’s law is stated as  **V = IR -----------(1)**  Where; **V** is the potential difference in volts (**v**)  **I** is the current in amperes (**A**) and  **R** is the resistance in Ohm’s (**Ω**) | The students begin to develop an idea of the relationship between the current passing through a metallic conductor and the potential difference. | To ensure proper understanding of the lesson. |
| **Step II** | *Factors affecting electrical resistance*  Four factors affecting electrical resistance are;   1. Length: The resistance of a conductor of uniform cross-sectional area is directly proportional to its length. 2. Area: The resistance of a conducting wire is inversely proportional to its area. 3. Temperature: The resistance of a conductor varies directly with its temperature for metallic conductors. For non-metallic conductors, e.r carbon, there is a decrease of resistance with temperature. However, some other materials are little affected by temperature changes. (e,g Constantine and manganin). | The students listen attentively to the teacher’s explanation. | To ensure that all the students are carried along. |
| **Step III** | *Example*  What is the resistivity of a cylindrical material wire whose 1.0m length has a resistance of 2.0 ohms? The diameter of the wire is 0.5mm.  S*olution*  Using ƿ = --------- (1)  ƿ =  ƿ = 3.9286 \* 10-7ohm-meter | The students listen attentively to the teacher’s explanation. | Consolidate acquired knowledge on the relationship between the current flowing through a material and the potential difference. |
| **Summary** | **Ohm’s law** states that the current flowing through a metallic conductor is directly proportional to the potential difference across its ends provided that temperature and other physical conditions remain constant.  The factors affecting the electrical resistance of a body includes;   1. Length of the material 2. Area of the material 3. Temperature 4. Nature of the material. | The students listen attentively to the teacher’s explanation. | For reference purpose. |
| **Evaluation** | The teacher evaluates the students by giving the students the following classwork.  Find the resistance of a wire of length 0.65m, radius 0.2mm and resistivity 3×10-6ohm-meter. | The students answer the question in their science notebook. | To ascertain the students level of understanding of the lesson. |
| **Conclusion** | The teacher makes correction of the classwork. | The students copy the correction in their exercise books. | For reference purpose |
| **Assignment (Homework)** | The teacher gives the students the following assignments.   1. When is ohm’s law not obeyed? 2. Using energy-band diagram, describe the conductivity of a metallic conductor, non-metallic conductor and a non-conductor with change in temperature. | The students copy the questions into their exercise books. | To encourage critical thinking of students at home. |



20/7/2023

Principal Head Instuctor