**EMERALD ROYAL INT’L SCHOOL**

**LESSON PLAN/NOTE FOR WEEK 5 ENDING: 2ND JUNE, 2023**

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| **Term** | 3rd |
| **Week** | 5 |
| **Date** | 29/05/2023 |
| **Class** | SSS 2 |
| **Subject** | Physics |
| **Topic** | Electric field 2 |
| **Sub-topic** | Capacitors |
| **Period** | 1 and 2 |
| **Time** | 10:30-11:50 |
| **Duration** | 80minutes |
| **Number in class** | 2 |
| **Average age** | 14years |
| **Sex** | Mixed |
| **Specific objectives** | By the end of the lesson, the students should be able to:   1. Explain the capacitor 2. Define capacitance 3. State the arrangement of capacitors in a circuit |
| **Rationale** | To enable the students understand the concepts of the capacitance of a capacitor. |
| **Previous knowledge** | Students should have been taught on electric charges, and the production of electric charges. |
| **Instructional aid** | One guide sheet for each student, a capacitor, an ammeter, a voltmeter, a science notebook and a science textbook. |
| **Reference** | * M.W. Anyakoha. New school physics for secondary schools. Africana first publishers PLC. page 383-392 * P.N. Okeke. Macmillan Senior Secondary Physics. Pearson. Page 233-241 |

**LESSON DEVELOPMENT**

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| **STEPS** | **TEACHER’S ACTIVITIES** | **STUDENTS’ ACTIVITIES** | **LEARNING POINTS** |
| **Introduction** | The teacher introduces the lesson by explaining that the storage of of electric current means that the charge remains even after the voltage source is disconnected. The measure of how much charge that can be stored is the capacitance C. More charge stored for a given amount of applied voltage means more capacitance. | The students will compare the capacitance of different capacitors. | To give the students a rudimentary understanding of capacitors. |
| **Step I** | *The Capacitor*  The capacitor is a device for storing electric charges or for storing electricity. It consists essentially of two conductors (metal plates) carrying opposite charges. The insulating material placed between the plates of a capacitor is called a dielectric substance. | Begin to develop an idea of what capacitors are used for. | To ensure proper understanding of the lesson. |
| **Step II** | *The capacitance of a capacitor*  The capacitance © of a capacitor is defined as the ratio of the charge Q on either plates or conductors to the potential difference V between them. It is given mathematically as C = ----------(1)  The unit of the capacitance is the farad. Quantitatively, the capacitance of a capacitor is a measure of its ability to store up electric charges.  The capacitance increases with the area between the plates, decreases with increasing distance, and increases with dielectric constant. | The students listen attentively the teacher’s explanation. | To ensure that all the students are carried along. |
| **STEP III** | *The arrangement of capacitors in an electric circuit.*  There are two arrangement of capacitors.   1. Series: series arrangement is the end to end connection of capacitors in an electric circuit. The reciprocal of the equivalent capacitance of any number of capacitors connected in series is the sum of the reciprocal of the individual capacitance. It is given mathematically as;   **=**   1. Parallel: The resultant or equivalent capacitance of any number of capacitors connected in parallel is the sum of their individual capacitance. It can be mathematically stated as;   **C = C1 2 C3 … Cn** | The students listen attentively to the teacher’s explanation. | Consolidate acquired knowledge on the capacitance of a capacitor. |
| **Summary** | A capacitor is a device for storing electric charges. The capacitance of a capacitor is the charge per unit p.d between the plates of a capacitor. The capacitance of a capacitor id dependent on the area of the plates, the distance of separation between the plates and the dielectric between the plates.  When capacitors are connected in series, the equivalent capacitance is given by  **=**  When connected in parallel, the equivalent capacitance is given by  **C = C1 2 C3 … Cn** | 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.   1. What is a capacitor? 2. Explain the term the capacitance of a capacitor. | 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 assignment.  Four capacitors of capacitance C12, C3, and C4 are connected in series, what is the equivalent capacitance? | The students copy the questions into their exercise books. | To facilitate logical thinking of students at home. |



20/7/2023

Principal Head Instuctor