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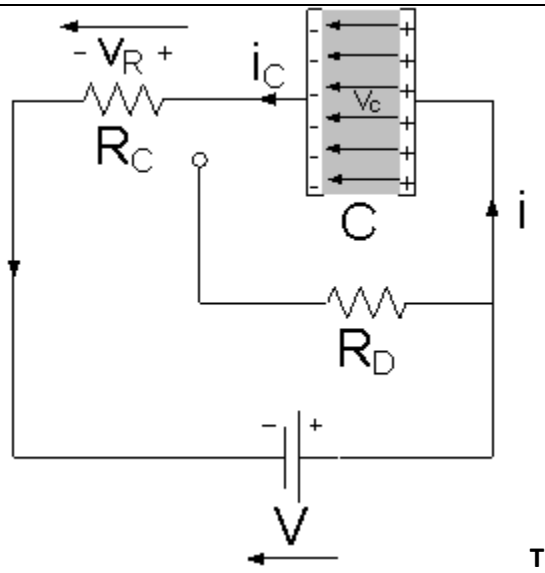
BASIC 8

WEEKLY LESSON PLAN – WEEK 6

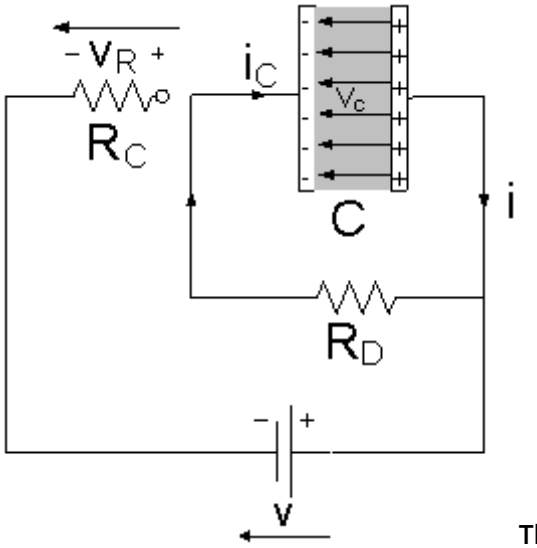
Strand:	Forces and Energy		**Sub-Strand:**	Electricity and Electronics	
Content Standard:	B8.4.2.2 Demonstrate understanding of the functions of capacitors in relation to LEDs, Diodes and resistors in electronic circuits.				
Indicator (s)	B8.4.2.2.1 Demonstrate the charging and discharging action of a capacitor in a dc electronic circuit		**Performance Indicator:** learners can follow the process of charging a capacitor using a DC.		
Week Ending	12-05-2023				
Class	B.S.8	**Class Size:**		**Duration:**	
Subject	Science				
Reference	Science Curriculum, Teachers Resource Pack, Learners Resource Pack, Textbook.				
Teaching / Learning Resources	Charts, bulb, wires, battery, switch, Capacitor, Poster, Pictures		**Core Competencies:**	• Critical Thinking • Problem Solving • Creativity and Innovation	

DAY/DATE	**PHASE 1 : STARTER**	**PHASE 2: MAIN**	**PHASE 3: REFLECTION**
MONDAY **08-05-2023**	Discuss the meanings of keywords and terminologies in the lesson with the Learners. **Keywords;** ▪ Capacitor ▪ Direct current (dc) ▪ Current ▪ Circuit ▪ electrolytic capacitors ▪	1. Using a Chart, explain the action of capacitor charging and discharging. 2. Assist Learners to identify the process of charging a capacitor using a dc. 3. Discuss with Learners about the general equation for charging and discharging of capacitor. 4. Learners brainstorm to explain the functions of capacitors in direct current(dc) **The charging and discharging action of a capacitor in a dc electronic circuit;** The capacitor is fully charged when the voltage of the power supply is equal to that at the capacitor terminals. This is called capacitor charging; and the charging phase is over when current stops flowing through the electrical circuit. When the power supply is removed from the capacitor, the discharging phase begins.	Through questions and answers, conclude the lesson. **Exercise;** 1. Explain the action of capacitor charging and discharging. 2. State the process of charging a capacitor using dc. 3. Write the function of

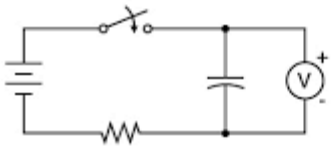
capacitor in direct current(dc)



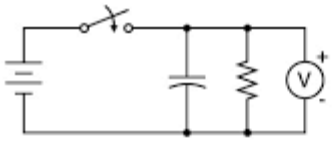
The Capacitor is charging;



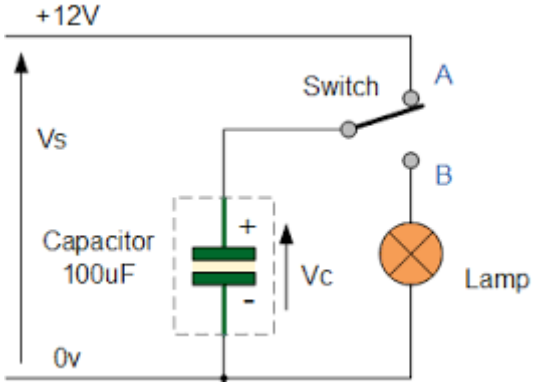
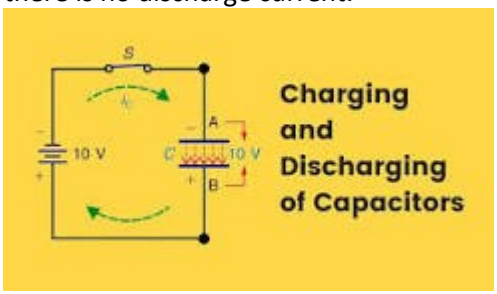
The Capacitor is Discharging

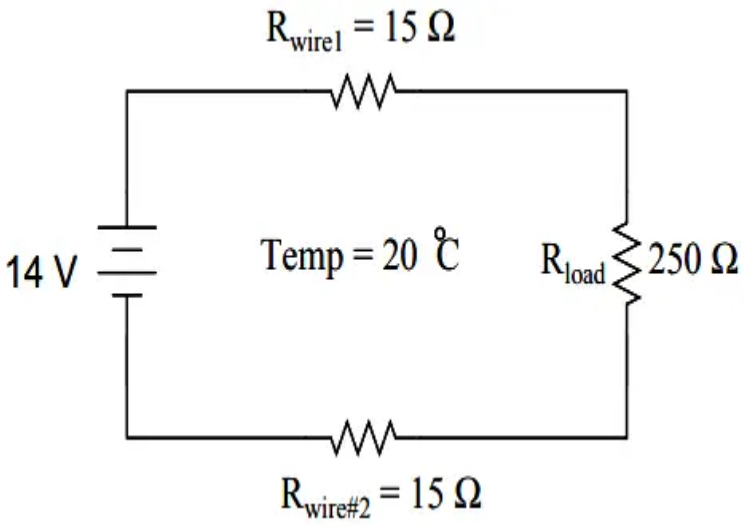


Charging circuit



Discharging circuit

THURSDAY **11-05-2023**	Through questions and answers, review Learners knowledge on the previous lesson.	1. Discuss the effects of a capacitor in an electric circuit with the Learners. 2. Show a video on the discharging effect of a capacitor. 3. Assist Learners to identify the factors that affects resistance of a capacitor. 4. Learners brainstorm to explain the factors that affect the capacitance of a capacitor. **Effects of a Capacitor in an Electric Circuit;** Unlike the battery, a capacitor is a circuit component that temporarily stores electrical energy through distributing charged particles on (generally two) plates to create a potential difference. A capacitor can take a shorter time than a battery to charge up and it can release all the energy very quickly.  **Discharging the Capacitor** The negative plate repels electrons, which are attracted to the positive plate through the wire until the positive and negative charges are neutralized. Then there is no net charge. The capacitor is completely discharged, the voltage across it equals zero, and there is no discharge current.  **Factors that affects the capacitance of a capacitor;** - The area of the plates - The distance between the plates - The ability of the dielectric to support electrostatic forces	Reflect on the effects of discharging a capacitor. **Exercise;** 1. State 2 effects of a capacitor in an electric circuit 2. Explain 3 factors that affect resistance of a capacitor

FRIDAY **12-05-2023**	Ask Learners to explain what causes a capacitor to discharge.	1. Discuss with Learners on what happens during the discharging of a capacitor. 2. Using a chart, explain to Learners on why resistance of capacitor rises with temperature. 3. Learners in small groups to discuss and report to the class on what capacitors tend to resist changes in. **Reasons why resistance of capacitor rise with temperature**; Generally, heat lowers Class 2 capacitors' capacitances, however around the Curie point (approximately 120°C for BaTiO3), the capacitance increases. This is due to an increase in the dielectric constant as the crystal structure of the ceramic changes from tetragonal to cubic. **How resistance change with temperature;** According to the general rule, the dependence of resistance on temperature is that the resistance increases as the temperature increases in conductors and decreases with the increasing temperature in insulators. In semiconductors, the resistance of both the semiconductor normally decreases as the temperature rises.  	Through questions and answers, conclude the lesson. **Exercise;** 1. Explain what happens during the discharging of a capacitor 2. State 2 reasons why resistance of capacitor rises with temperatur e.

Name of Teacher: ***School:*** ***District:***