4.2 Triple/6.2 Combined Science- Electricity

irge-Triple only									
Electric fields are found around charges, a charged object in an electric field will experience a force. The field lines are perpendicular to the charge	Friction			The force experienced when two objects come into contact with each other					
When two oppositely charged objects are drawn to each other	Transferring electrons		۱ e	When two insulating materials rub against each other they experience friction. The friction causes electrons to transfer from one object to the other.					
When two like charged objects push away from each other	Negative charge		2 1	When an object gains electrons					
There are two types of electric charge, positive and	Positive chance			When an object losse electrone					
negative	F05	Positive charge		when an object loses electrons.					
Negative charged particle that can move in order to give an object a charge									
irrent	3.0) Circuit Sym	nbols	5					
The flow of electric charge, has the same value at any point in a single closed loop								1	
Component used to measure current, must be connected in series, units are Amps (A)		Cell	-	-1⊢	Open Switch	- ~ ~~	Diode		
Q is the charge flow in coulombs, C		Battery	+	ŀ ⊢	Closed Switch	- o -o-	LED		
I is the current in amps, A t is the time in seconds, s		Resistor	-0		Ammeter	—(A)—	Lamp	$-\otimes$	
ifference (voltage) Also called voltage, the potential difference between two		Variable Resistor	Ĺ,	\angle -	Voltmeter	S	Fuse		
points in an electric circuit is the work done when a coulomb	LDR As the light leve				È—	Thermist	or		
cause charge to flow			level	el increases the		As the temperature increases the			
Component used to measure potential difference, must be connected in parallel units are Volts (V)		resistance decreases. resistance decreases.							
Voltage is the work done per unit of charge E=VQ E is the energy in joules, J V is the voltage in volts, V Q is the charge flow in coulombs, C									
	Electric fields are found around charges, a charged object in an electric field will experience a force. The field lines are perpendicular to the charge When two oppositely charged objects are drawn to each other When two like charged objects push away from each other There are two types of electric charge, positive and negative Negative charged particle that can move in order to give an object a charge Frent The flow of electric charge, has the same value at any point in a single closed loop Component used to measure current, must be connected in series, units are Amps (A) Q is the charge flow in coulombs, C I is the current in amps, A t is the time in seconds, s Ifference (voltage) Also called voltage, the potential difference between two points in an electric circuit is the work done when a coulomb of charge passes between the points. Potential difference cause charge to flow Component used to measure potential difference, must be connected in parallel, units are Volts (V) Voltage is the work done per unit of charge E=VQ E is the energy in joules, J V is the voltage in volts, V Q is the charge flow in coulombs, C	Refer this is the charge found around charges, a charged objectIn a electric field will experience a force. 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Potential difference cause charge to flow LDR As the light level resistance decret As the light level resistance decret Waits be work done per unit of charge E=VQ I is the energy in joules, J First the charge flow in coulombs, C I is the charge flow in coulombs, C Waits the work gene plow in coulombs, C I call I is the energy in joules, J V is the voltage in volts, V Q is	Implementation Implementation Implementation Implementa	Refer the product of	Electric fields are found around charges, a charged object in an electric field will experience a force. The field lines are perpendicular to the charge Friction The force experienced when two o with each other When two oppositely charged objects are drawn to each other Transferring electrons When two insulating materials rub experience friction. The friction from one object to the other. When two like charged objects push away from each other Negative charge When an object gains electrons. When two like charged objects are drawn to each other Negative charge When an object loses electrons. Negative charged particle that can move in order to give an object a charge Positive charge When an object loses electrons. The flow of electric charge, has the same value at any point in a single closed loop 3.0 Circuit Symbols Switch Component used to measure current, must be connected in series, units are Amps (A) Switch Switch Q is the charge flow in coulombs, C I is the current in amps, A t is the time in seconds, s Resistor Ammeter O Ifference (voltage) Also called voltage, the potential difference between two points in an electric circuit is the work done when a coulomb of charge passes between the points. Potential difference, must be connected in parallel, units are Volts (V) Not the light level increases the resistance decreases. As the temp resistance decreases. 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5.0 Resistance		6.0 Current-vo	ltage graphs		
Resistance Ohm's Law	Measures how hard it is for electrical current to pass through a component V=IR	Ohmic Conductor	Current and potential difference are directly proportional. Resistance is constant.		
	V is the voltage in volts, V R is the resistance in Ohms, Ω I is the current in amps, A	Potential Difference			
Factors affecting resistance	 As the cross sectional area increases, resistance decreases. As the length increases the resistance increases. As the temperature increases the resistance increases. The material of the component effects the resistance. 	Filament Lamp	Resistance of a filament lamp is not constant. As temperature ncreases resistance increases		
		Diode	The current in a diode flows in one direction only. The diode has very high resistance in the reverse direction.		
7.0 Series and	d Parallel Circuits				
	Series-Connected along a single loop		Parallel-connected along multiple branches		
Current	Is the same at all points	Current	The total current is the sum of the current across all components		
Voltage	The total potential difference of the power supply is shared across all components	Voltage	The voltage is the same at all points		
Resistance	R _{total} =R ₁ +R ₂	Resistance	The total resistance of two resistors is less than the resistance of the smallest individual resistor.		

8.0 Electrical Supply 9.0 Electrical W			ring			
Direct Current	DC= Direct current. The current always flows in the same direction, batterie produce DC voltage	3 core cable	3 copper wires coated in insulating plastic			
Alternating Current	AC= alternating current. The current constantly changes direction, produced by an alternating potential difference, where positive and negative ends continually swap	Live Wire	Live wire is brown, carries alternating potential difference of 230V			
UK mains	UK mains supply is AC at 230V, it has a frequency of 50Hz	Neutral Wire	Neutral wire is blue, completes the circuit, carrying current out of the appliance at OV			
		Earth Wire	Earth wire is green and yellow, it is a safety feature. Current is at OV Prevents the appliance becoming live if there is a fault. It only carries current if there is a fault.			
10.0 Power		11.0 Energy Tran	sferred			
Power	 The power of a device is related to potential difference and current Energy transferred over time 	E=Pt	Energy- J Power-W Time-s			
P=VI	Power-W Voltage-V Current-A	E=QV	Energy- J Charge Q- C Voltage-V			
P=I ² R	Power=W Current=A Resistance=Ω					
12.0 National	Grid					
National Grid	A network of cables that connect power stations with consumers	Meeting Demand	Demand for electricity varies throughout the week and seasonally. Spare capacity for generating extra electricity is kept on standby for major events			
Step up transformer	Used to increase the potential difference from the power station to the transmission cables	National grid efficiency	Electricity carried with high potential difference and low current, this reduces heat loss in the transmission cables.			
Step down transformer	Used to step down the potential difference from the transmission cables for domestic use					