



Electrical Principles and Technologies

Unit D

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| Topic 1 | Electric Charges | <ul style="list-style-type: none"> ▪ Producing Charges ▪ Making Sense of Electrical Charges ▪ Conductors, Insulators, and In-Between | <ul style="list-style-type: none"> ▪ Neutralizing Unbalanced Charges ▪ Preventing Electrostatic Buildup |
| Topic 2 | Electricity Within a Circuit | <ul style="list-style-type: none"> ▪ Circuit Elements and Diagrams ▪ Basic Circuit Symbols ▪ Measuring Current | <ul style="list-style-type: none"> ▪ Measuring Voltage ▪ Rivers of Electricity |
| Topic 3 | Resisting the Movement of Charge | <ul style="list-style-type: none"> ▪ Calculating Resistance ▪ Model problem ▪ Resistors | <ul style="list-style-type: none"> ▪ Variable Resistors ▪ Types of Circuits ▪ House Wiring |
| Topic 4 | The Energy Connection | <ul style="list-style-type: none"> ▪ Electricity and Heat ▪ Electricity to Motion ▪ Motion to Electricity | <ul style="list-style-type: none"> ▪ Electricity to Light ▪ Light to Electricity |
| Topic 5 | Portable Power | <ul style="list-style-type: none"> ▪ Electrochemical Cells ▪ Fuel Cells ▪ Types of 'dry' cells | |
| Topic 6 | Generators and Motors | <ul style="list-style-type: none"> ▪ Electricity to Magnetism ▪ Electromagnets ▪ Magnetism to Electricity ▪ What's in a Generator? ▪ DC Generators | <ul style="list-style-type: none"> ▪ Electric Motors: Electric to Mechanical Energy ▪ DC Motors ▪ AC Motors |
| Topic 7 | Electricity in the Home | <ul style="list-style-type: none"> ▪ Transmission of Electricity through the Power Grid ▪ From the Grid into Your Home ▪ Home Wiring ▪ Digital Devices ▪ Measuring Electric Power ▪ Model Problem ▪ Paying For Electric Energy ▪ Model Problem | <ul style="list-style-type: none"> ▪ Power Rating ▪ Electric Devices and Efficiency ▪ Incandescent Bulbs ▪ Halogen Bulbs ▪ Fluorescent Tubes ▪ Model Problem ▪ Home Electric Safety ▪ Electric Safety Outdoors |
| Topic 8 | Electricity Production and the Environment | <ul style="list-style-type: none"> ▪ Electric Energy from Burning Fuels ▪ Fossil Fuels Affect Land and Air ▪ Electric Energy from Flowing Rivers ▪ Energy from Atomic Reactions ▪ Heating the Environment ▪ Electrical Technology and Society | <ul style="list-style-type: none"> ▪ Cogeneration ▪ Reducing the Energy Wasted by Devices ▪ Alternative Energy Sources ▪ Electrical Energy Sources and Alternatives |