

REVIEW

Unit 3 – Heat and Temperature

1.0 Technologies for Obtaining and Controlling Heat

- ❖ Heat technologies have evolved over time
- ❖ Culture and technology are linked
- ❖ Evolution has integrated heat-related materials and technologies
- ❖ Choices about the environment involves individuals and society

2.0 Heat Affects Matter

- ❖ Transferring heat to and from matter can cause a change in state
- ❖ The **Particle Model of Matter** explains changes in state and volume
- ❖ **Conduction** (in contact), **Convection** (circular motion) and **Radiation** (waves)
- ❖ **Thermal energy** is the total kinetic energy of the particles in a substance – heat is transferred from an area of high kinetic energy to an area of low kinetic energy
- ❖ **Temperature** is the measure of the average kinetic energy of the particles in a substance

3.0 Natural Phenomena and Technology Devices

- ❖ Thermal energy is produced by the Sun, decay, fire and geothermal
- ❖ **Passive** and **Active** solar heating systems use the sun's energy and are environmentally friendly
- ❖ **Thermostats** control temperature in heating systems
- ❖ Insulation helps block unwanted heat transfer (heat loss)

4.0 Benefits and Costs of Heat Technologies

- ❖ Non-renewable resources have a limited supply
- ❖ Fossil fuels are the major sources of heating, but degrade the environment
- ❖ Costs of using natural resources: **economic, environmental and societal**
- ❖ Energy Alternatives: **solar, wind, geothermal, nuclear and hydro-electric (gravitational)**