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Subject Name: Air Conducting & Acoustics
Subject Code:68763

Prepared By Lima Akter
Jr. Instructor
Architecture & Interior Design Technology

Chapter-01

Chapter Name:
Air conditioning in Building Design.

- 1.1 Define air conditioning
- 1.2 Describe necessity of air conditioning in building
- 1.3 Explain conductivity, convection, radiation.
- 1.4 Discuss the convert of Fahrenheit temperature to Celsius.

What do you mean by Air Conditioning??

Question: What do you mean by Air Conditioning??

Answer:

A system or process for controlling the temperature and sometimes the humidity and purity of the air in a house, car etc.

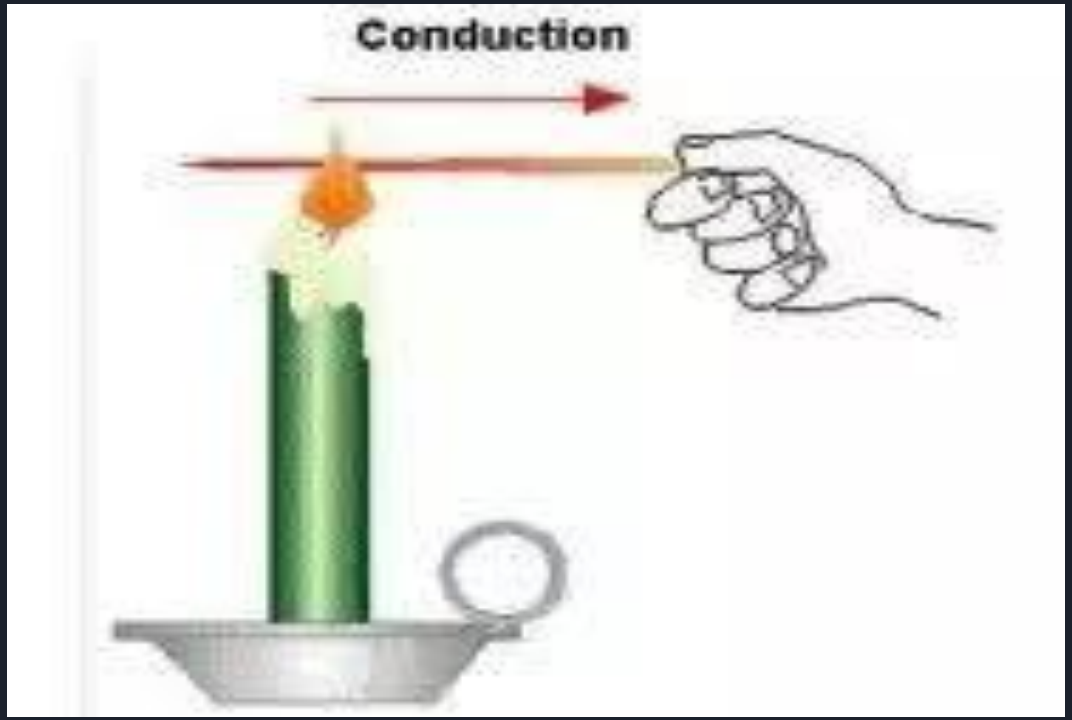
An **air conditioner** is a **system** or a machine that treats **air** in a defined, usually enclosed area via a refrigeration cycle in which warm **air** is removed and replaced with cooler **air**. In construction, a complete **system** of heating, ventilation, and **air conditioning** is referred to as HVAC

Question : Do you think there is a necessity of air-conditioning in building??

Answer: Proper ventilation and air conditioning in large commercial buildings, and especially in office buildings, has many benefits. These include some benefits that can contribute to a healthier bottom line. The environment in the workplace is receiving plenty of attention, with employee morale continuing to be an important consideration for business owners. Furthermore, scientists have proven that a healthy workplace is a productive workplace.

As we have come to learn more about the importance of good ventilation at home and in the workplace, building regulations have been established with the intent of minimizing uncontrollable infiltration ventilation and maximising healthy doses of controllable ventilation.

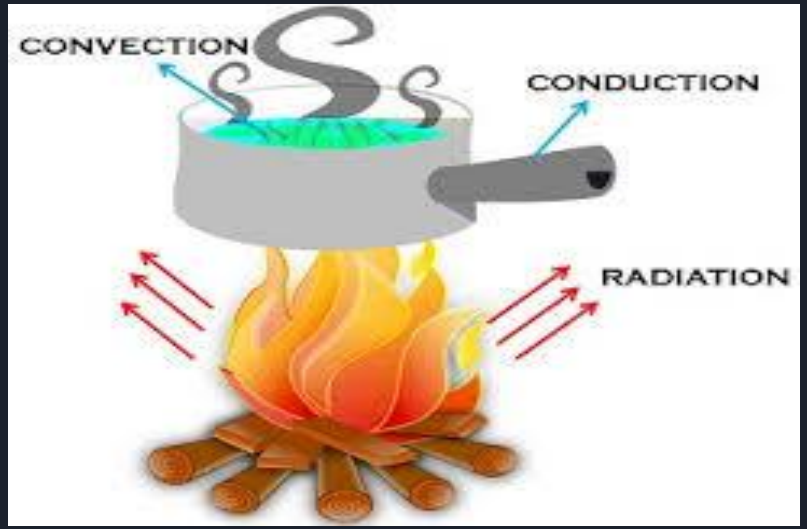
Question :What do you mean by Conduction????



Question :What do you mean by Conduction????

Answer: The process by which heat or electricity is directly transmitted through the material of a substance when there is a difference of temperature or of electrical potential between adjoining regions, without movement of the material.

- the process by which sound waves travel through a medium.
- the transmission of impulses along nerves



Group Work : Make the example of Heat Conduction

Conduction is the movement of heat or electricity through a material without any perceptible motion of the material.

Everyday Examples of Heat or Thermal Conduction

- After a car is turned on, the engine becomes hot. The hood will become warm as heat is conducted from the engine to the hood.
- A radiator is a good example of conduction. Anything placed on the radiator, like an article of clothing, will become warm.
- You can warm your back muscles with a heating pad.
- If you touch a hot stove, heat will be conducted to your finger skin will burn

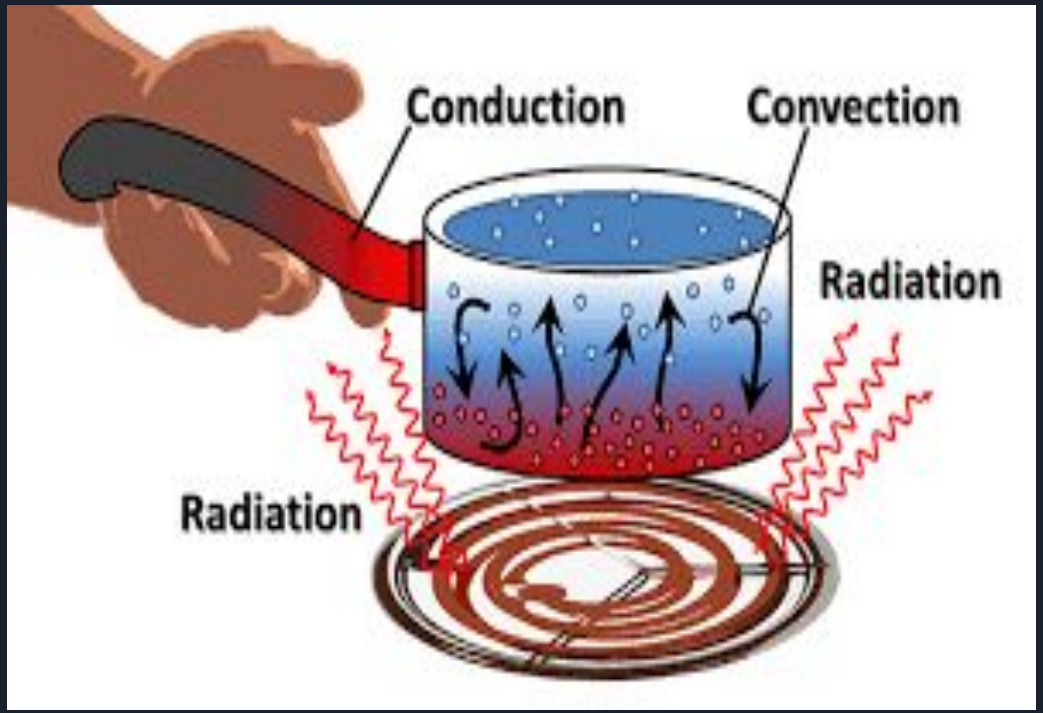
Group Work : Make the example of Heat Conduction

Conduction is the movement of heat or electricity through a material without any perceptible motion of the material.

Everyday Examples of Heat or Thermal Conduction

- Trying to cross the street barefoot in the summer may result in heat being conducted from the asphalt to your feet.
- The heat from a hot liquid makes the cup itself hot.
- An ice cube will soon melt if you hold it in your hand. The heat is being conducted from your hand into the ice cube.
- Hot food will heat a stoneware or porcelain plate for a time.
- A metal spoon becomes hot from the boiling water inside the pot.

Question :What do you mean by Convection????

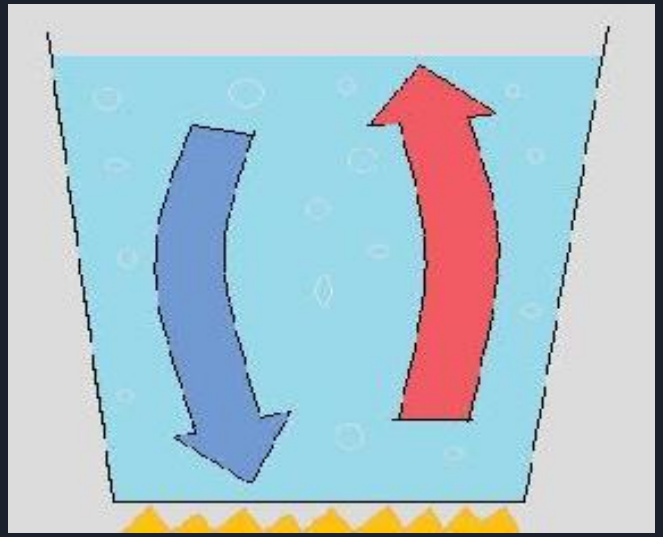


Question :What do you mean by Convection??**??**

Answer: **Convection** is the circular motion that happens when warmer air or liquid — which has faster moving molecules, making it less dense — rises, while the cooler air or liquid drops down. ... **Convection** currents within the earth move layers of magma, and **convection** in the ocean creates currents.

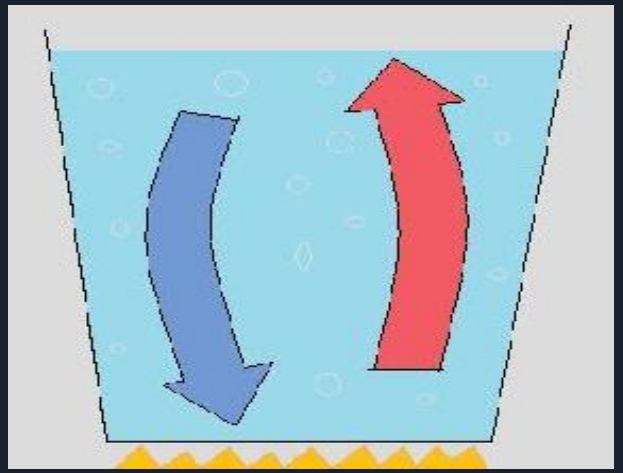
1. a process of heat transfer through a gas or liquid by bulk motion of hotter material into a cooler region
Compare conduction (sense 1)
2. *meteorology*the process by which masses of relatively warm air are raised into the atmosphere, often cooling and forming clouds, with compensatory downward movements of cooler air
3. *geology*the slow circulation of subcrustal material, thought to be the mechanism by which tectonic plates are moved

Have you ever held your hand over a pot of boiling water? You probably couldn't keep it there for long. But when you put your hand *alongside* the same pot, it feels perfectly fine. Why does that happen? Because of convection!



There are three types of heat transfer: conduction, convection and radiation. **Convection** is a type of heat transfer that can only happen in liquids and gases, because it involves those liquids or gases physically moving.

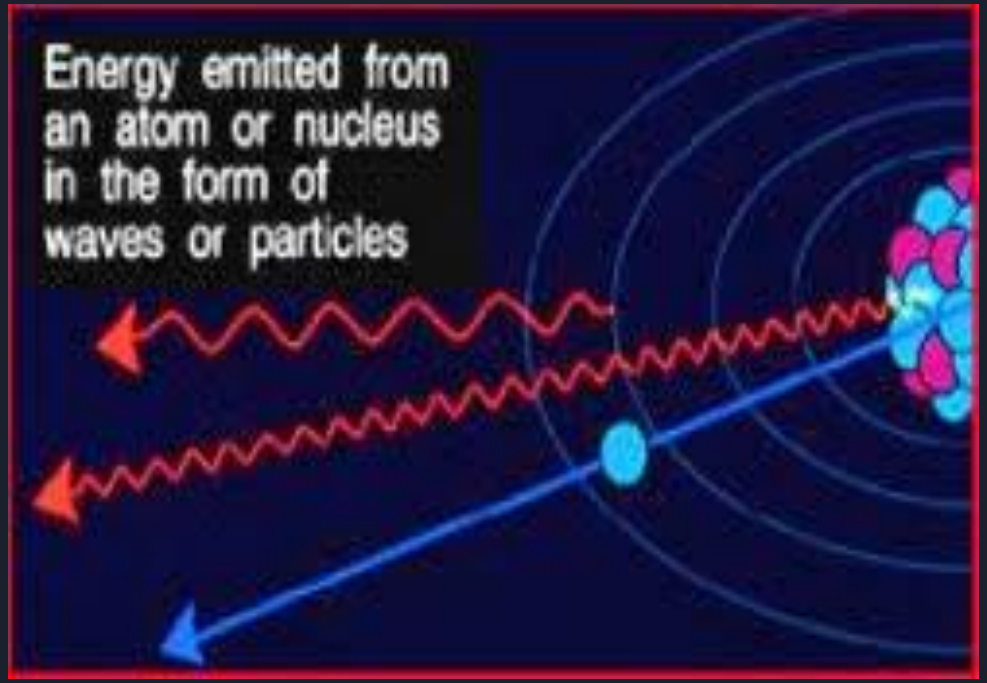
Convection happens when there is a difference in temperature between two parts of a liquid or gas. The hot part of a fluid rises, and the cooler part sinks. But let's use an example to think about *why* it happens, lest we assume that the fluid has a mind of its own.



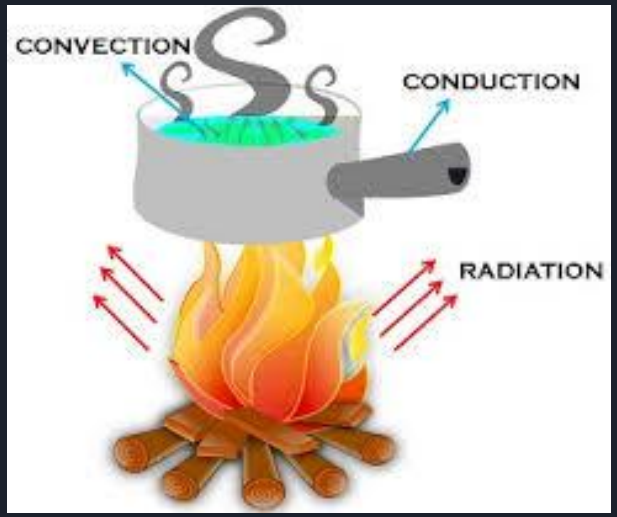
If you put something less dense inside something more dense, what happens? Well, try putting a cork under water. You won't be surprised to see it jump right to the surface. In this same way, the hot water at the bottom of the kettle is less dense than the cold water above it, so it will rise to the surface. Once it gets there, it cools down again because it's further away from the heating element. This causes it to become more dense and sink

These movements of the water are convection currents, and that's why boiling water moves around so much. The water heats up and becomes less dense, then it rises and cools, becoming more dense again, until it sinks. This process repeats over and over. And it all happens due to a simple temperature difference between the top and bottom of the kettle.

Question :What do you mean by Radiation????



Question :What do you mean by Radiation????



Answer:

The emission of energy as electromagnetic waves or as moving subatomic particles, especially high-energy particles which cause ionization

In physics, **radiation** is the emission or transmission of energy in the form of waves or particles through space or through a material medium. This includes:

Group Work

Prepare difference among Convection, Conduction & Radiation.