INTRODUCTION TO PHYSICS

What is physics?

The word physics is derived from the Latin word physica, which means "natural thing."

Physics is a branch of science that deals with the properties of matter and energy and the relationship between them. It also tries to explain the material world and the natural phenomena of the universe.

A person who studies and deals with physics is known as a physicist.

IMPORTANCE OF STUDYING PHYSICS

1. Physics helps us to understand how the world around us works, from bottle openers, light bulbs and cell phones to muscles, lungs and brains; from paints, musical instruments and movements, to cameras, cars and buildings; from earthquakes, tsunamis and hurricanes to thunder and lightning, and from our DNA genes to the earth formation.
2. Physics helps us to organize the universe. It deals with fundamentals and helps us see the connections between seemly disparate phenomena. It gives us powerful tools to help us express our creativity, to see the world in new ways and then to change it.
3. Physics provides quantitative and analytic skills needed for analyzing data and solving problems in science, engineering and medicine, as well as in economics, finance, management, law and policy.
4. Physics is the basis for most modern technology and the tools and instruments used in scientific, engineering, medical research and development. Manufacturing is dominated by physics-based technology.
5. Physics helps you to help others: Physics is an important part of the Medical Field Medicine without Physics technology would be impossible. Schools without qualified Physics teachers cut their students off from a host of well-respected, well-paying careers.

IMPORTANCE OF PHYSICS IN OUR DAILY LIFE

In our daily life, we hardly find a device in which laws of physics are not involved. For example;

1. Air Conditioning and refrigeration: This is based on Physics concepts of cooling by

rapid evaporation, conducting properties of materials and convention.

2. Medical Diagnosis: Modern-day medical workers would not be effective if not for some applications of Physics. X-rays, ultrasound, microscopes, Electro-cardiogram, pacemaker, radiotherapy equipment etc. are designed based on the principles of Physics.

3. Communications: Radio, television and other electronic communication have made a tremendous impact in making the world a better place to live in. This would not have been possible without principles and concepts discovered and developed by physicists.

4. Space exploration: Today we know more about the universe, through space exploration, many of these explorers are Physicists.

5. Generation and Distribution of Electricity: No major business outfit can function without electricity. No factory or workshop can function without electricity. Industries, Hospitals, Educational and research institutes, etc. will close down if electricity supply is cut off.

BRANCHES OF PHYSICS AND THEIR DEFINITION

(1) Atomic physics.: It is the study of the structure and properties of atoms.

(2) Astrophysics: The branch of physics which deals with the study of universes such as stars, planets and galaxies, etc.

(3) Bio-Physics: Biophysics is the branch of physics in which we study biological problems and phenomena's by using techniques of physics. Major application and achievement of biophysics is D.N.A.

(4) Chemical physics: It is the study of the science of physical relations which involved in chemistry.

(5) Chaos: The study of systems with a strong sensitivity to initial conditions, so a slight change at the beginning quickly become major changes in the system. Chaos theory is an element of quantum physics and useful in celestial mechanics.

(6) Cosmology: The study of the universe as a whole, including its origins and evolution, including the Big Bang and how the universe will continue to change.

(7) Crystallography: The study of crystals and crystalline structures.

(8) Electricity and Magnetism: It is the study of the charges at rest and in motion, their effects

and their relationship with magnetism.

9) Engineering physics: It is the study of fields of physics and engineering.

(10) Econophysics: It deals with physical processes and their relations in the science of economy.

(11) Electronics: Electronics is the branch of physics in which motion of an electron is controlled by using semiconductor devices.

(12) Modern physics. It is the branch of physics which deals with the theory of relativity and quantum mechanics. Max plank and Einstein are considered the father of modern physics.

(13) Molecular Physics: The study of the physical properties of molecules.

(14) Nanotechnology: the science of building circuits and machines from single molecules and atoms.

(15) Nuclear physics: it is the study of properties and behaviour of nuclei and the particles.

(16) Particle physics: It is also called high energy physics, analyses the behaviour and properties of elementary particles.

(17) Plasma physics: It is the study of production, properties of the ionic state of matter.

(24) Sound: It is the study of physical aspects of sound waves, their production, properties, and applications.

(18) Thermodynamics (Heat): It is the study of nature of heat, modes of transfer and effects of heat.

(19) Quantum Electrodynamics: The study of how electrons and photons interact at the quantum mechanical level.

(20) Quantum Optics: The application of quantum physics to light.

(21) Quantum Field Theory: The application of quantum physics to fields, including the fundamental forces of the universe.

FIRMS/INDUSTRIES WHERE PHYSICISTS CAN WORK

The Physicist by his training can work in so many industries with little retraining to suit the particular industry. Specifically, a physicist can work in the following areas:

1. Telecommunication: As Telecom experts
2. Aviation: They are required as pilots or air-traffic control Officers
3. Energy company e.g., Power Holding, Enron, etc.
4. Electronic Manufacturing Company e.g., Sony, Philips etc.
5. Information Technology Outfits
6. Radio/Television Broadcasting Station
7. Iron and Steel Industries.
8. Educational Research Institutions.
9. Space Technology
10. Medical Diagnostic Industries: As Medical Physicist and manufacturer of medical equipment.