4/11/2020
WEDNESDAY

# PHYSICS

STD - XI
class - 02

## UNIT-1 (Notes)

1. The working of telescopes and microscopes, colours in thin films etc., are explained in ——.

Ans) optics

2. The branch of physics, that was developed to understand and improve the working of heat engines is ——.

Ans) Thermodynamics

3. The propulsion of a rocket, propagation of water waves ~~of~~ or sound waves in air, etc. are explained in —.

Ans) Mechanics

4. What is scientific attitude?

Ans) It requires a flexible open minded approach towards solving problems without negleting the important points.

5. What is the basic aim of science?

Ans) The basic aim of science is to find out the ultimate truth. It prompts to analyse the natural phenomena occuring around us.

6. What does the Latin word 'scientia' mean?

Ans) To know

7. Which century had science become a true international enterprise?

Ans) 20th centure

8. On which scientific principle calculators and computers are based?

Ans) Digital logic of electronic circuits.

9. On which scientific principle does an aeroplane works?

Ans) Bernoulli's principle in fluid dynamics.

10. The scientists who showed that electric and magnetic phenomena are inseparable:

Ans) Oersted and Faraday

There are four basic forces that operate in nature. They are: Gravitational force, Electromagnetic force, Strong nuclear force, Weak nuclear force.

**1.4.1. Gravitational force:** It plays a key role in the large scale phenomena of the universe, such as formation and evolution of stars, galaxies and galactic clusters. The gravitational force of attraction is governed by Newton's law of gravitation.

**1.4.2. Electromagnetic force :** The electromagnetic force includes both electric and magnetic forces and is relatively strong. The force between two static (at rest) electric charges is governed by Coulomb's law in electrostatics.

It is enormously strong compared to gravity. The electric force between two protons, for example is $10^{36}$ times the gravitational force between them, for any fixed distance.

**1.4.3. Strong nuclear force:** The forces operating inside the nucleus are called nuclear or strong forces ($F_S$). This attractive force holds the constituents of the atomic nucleus viz, protons and neutrons. It is the strongest of all fundamental forces, about 100 times the electromagnetic force in strength. It is charge independent. Its range is, extremely small of about nuclear dimensions ($10^{-15}$m).

**1.4.4. Weak nuclear force:** It appears only in certain nucleus processes such as β-decay of a nucleus. The weak nuclear force is not as weak as the gravitational force, but much weaker than the strong nuclear and electromagnetic forces. The range of weak nuclear force is exceedingly small, of the order of $10^{-16}$ m.

The relative strength of the first three types of forces are:

$F_G : F_E : F_S = 1 : 10^{36} : 10^{38}$

11. The scientist who unified the terrestrial and celestial domains under a common law of gravitation :

Ans) Newton

12. Name the weakest force among the fundamental force.

Ans) Gravitational force

13. Which force is present between all objects in universe ?

Ans) Gravitational force

14. Name the strongest force in nature. What is its range ?

Ans) Strong nuclear force

Range $-10^{-15}$ m.

15. Who discovered photoelectric effect ?

Ans) Einstein

16. Light year is the unit of ___.

Ans) Distance.

17. Chandrasekhar, an Indian scientist, was awarded Nobel Prize in the field of ___.

Ans) Astronomy

18. How will yo denote $10^{-6}$ in words?

Ans) Micron

19. What is called the average distance between the sun and earth?

Ans) Astronomical unit.

20. One gigahertz is ___.

Ans) $10^9$ Hz

21. Who recieved the first Nobel Prize in physics in India?

Ans) C.V. Raman

22. Roentgen is associated with which discovery?

Ans) X-rays

23. How much stronger the nuclear force compared to electromagnetic force?

Ans) 100 times

24. Which one is not a fundamental force in nature?

Ans) Frictional force