VKSU

(3) Plane Wavefront

When a wavefront is viewed from a Considerable distance from a Source of any Kind Then This wavefront appears as a plane. This type of Wavefront is Known as Plane - Wavefront.

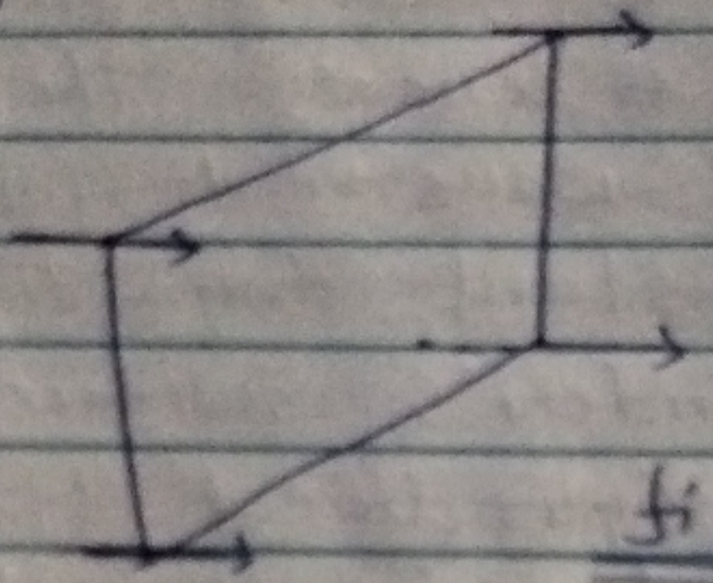

fig 1-3

When The Small Part of the Spherical or Cylindrical Wavefront originates from a distant Source Then a Plane Wave - front is obtained, like infinity.

Example:

Such wavefronts are Produced from a very distant Source. for example the Plane wave front - is the rays Coming out of the Sun.

VKS 2) Properties of wavefront

Wavefronts are imaginary ones. Some distinct Properties of wavefront are as follows.

(i) The light energy flows Perpendicular to the wavefronts.

(ii) The light takes Constant time to travel from one Position to another of the wavefront along the ray.

(iii) Space between a Pair of wavefronts is Constant along any ray.

(iv) All Points are in the Same Phase on the Same Wavefront.

(v) The wave Propagates Perpendicular to the Plane of the wavefront via the rectilinear Propagation of light Theory.

(vi) The type of wavefronts is based on the Shape of the Source.

(vii) All Particles of a medium vibrate in the Same Phase at a given instant.

Applications of wavefront :-

The applications of wavefronts are as follows:

(i) Wavefront Sensors are used to measure wavefront aberration for describing optical

VKSU

quality in Coherent Signals Through Polarization of light.

(ii) Wavefront-guided LASIK is an effective and quick treatment for Myopia, Nearsightedness, Hypermetropia, and Astigmatism. By Measuring the deviation of the eyes, the side effects of traditional LASIK are reduced.

Wave Motion:

Introduction —

The wave motion is a type of disturbance that travels Through the medium due to the repeated vibrations of the Particles of the medium about their Mean Position.

or

Wave motion is a transfer of energy and momentum from one Point to another of the medium, without any actual transportation of matter between the two Points.

Characteristics of wave motion:-

Some characteristics of wave motion are as follows:—

VKSU

(i) Wave motion is a type of disturbance which Propagates Through a medium.

(ii) A Physical medium is necessary for the transmission of mechanical waves.

(iii) When a wave motion goes via a medium, Particles of the medium only vibrate simple harmonically about their mean Position. Now they leave their position and move with the disturbance.

(iv) It has a continuous phase difference between Successive Particles of the medium which means particle 2 starts vibrating Slightly later Compared to Particle 1 and Go on.

(v) The velocity of the Particle varies at different Positions during vibration.

(vi) The velocity of Wave motion Through a Particular medium is Constant and is based only on the Nature of Medium and it does not depend on the frequency, Wavelength or intensity. Energy Propagates with wave motion without any net transport through the medium.