

# POLARISATION OF LIGHT

## Introduction :-

The phenomenon of interference and diffraction indicates that the light travels in the form of wave but they do not tell us about the type of the light waves i.e. whether the light waves are longitudinal or transverse or whether the vibration are linear, circular, elliptical, torsional. Such important enquiries gives us a phenomenon and such phenomenon of light is called Polarisation. which can be explained below :-

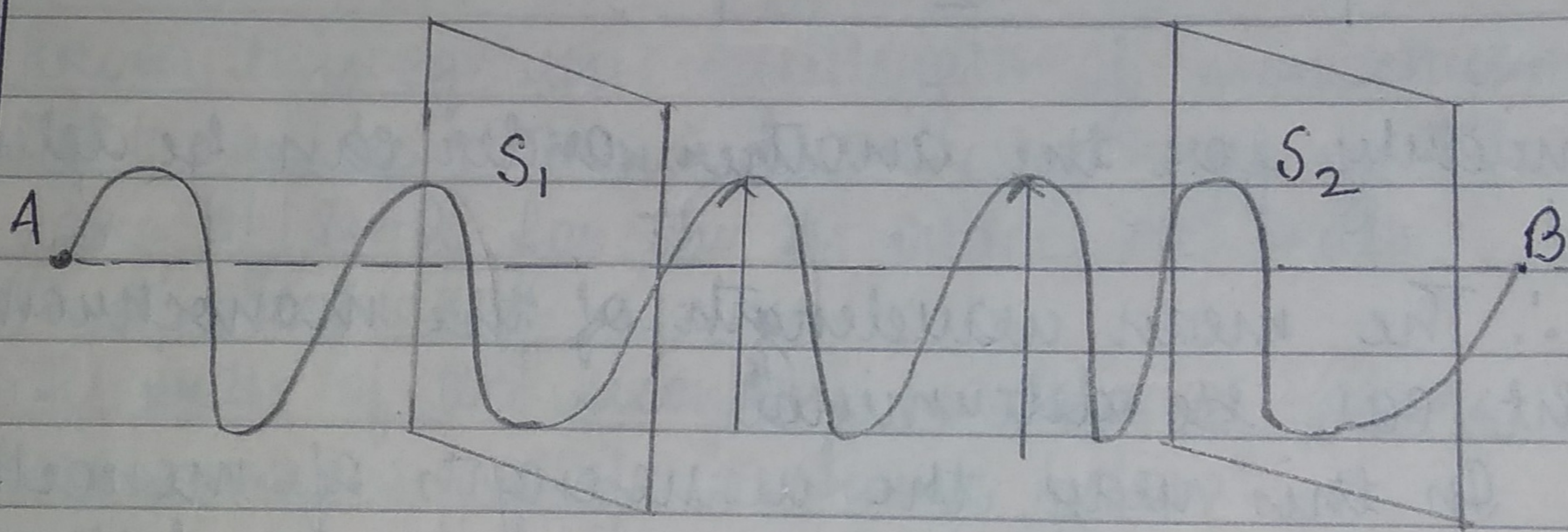


Figure :-

In this experimental arrangement a string passing through two parallel slits  $S_1$  and  $S_2$  and consider that the string is held by two persons A and B in their hands and standing at some distance to each other.

If the person A moves his hand up and down to the slit  $S_1$ , then the waves will be produced



in the string which travels towards the person B.

In this case the particle of the string vibrates along the direction parallel to the slit  $S_1$ , when the slit  $S_2$  moving about its own axis very slowly then the maximum and minimum intensity will be seen by the person 'B' it is due to the waves perpendicular to the propagation and establishes that the light wave becomes transverse in nature and such wave is said to be plane polarised light. If the person A moves his hand in all possible direction instead of moving up and down then the particle of the wave will vibrate in all direction and such waves are called polarised light.

If the longitudinal waves are produced by moving the string up and down then the waves will freely pass through the slit  $S_1$  and  $S_2$  and the constant maximum intensity will be seen by the person 'B'.

From the above discussion we come to the conclusion that the light waves vibrate perpendicular to the direction of propagation. Because the asymmetry of light will be seen by the person B which confirms the light waves is transverse in nature and such phenomenon of light is called polarisation and the light is called plane polarised light.