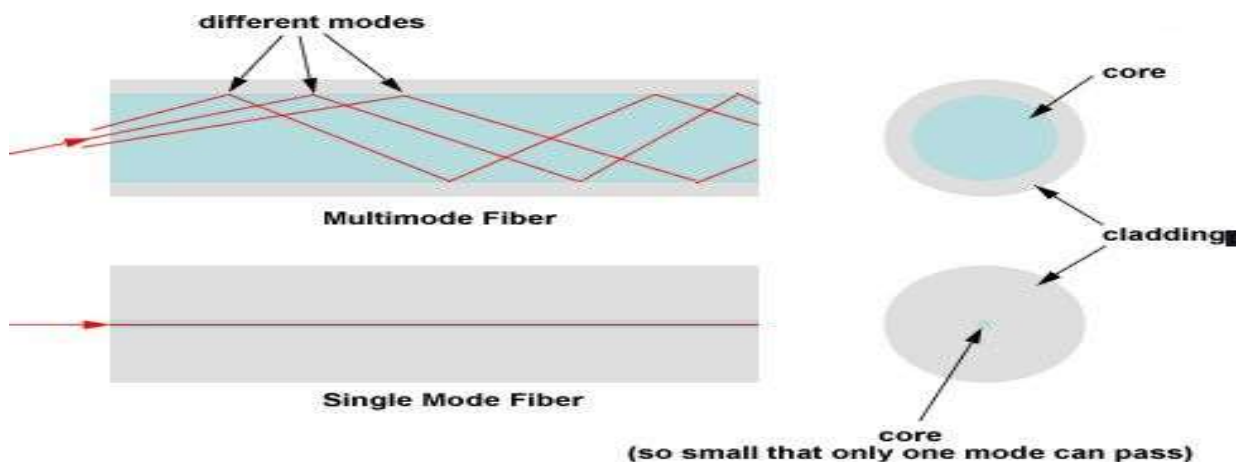


Chapter 3rd [Networking Concepts]

Propagation Mode:- There are 2 types of propagation mode in fiber optics cable which are multi-mode and single-mode. These provide different performance with respect to both attenuation and time dispersion. The single-mode fiber optic cable provides the better performance at a higher cost.

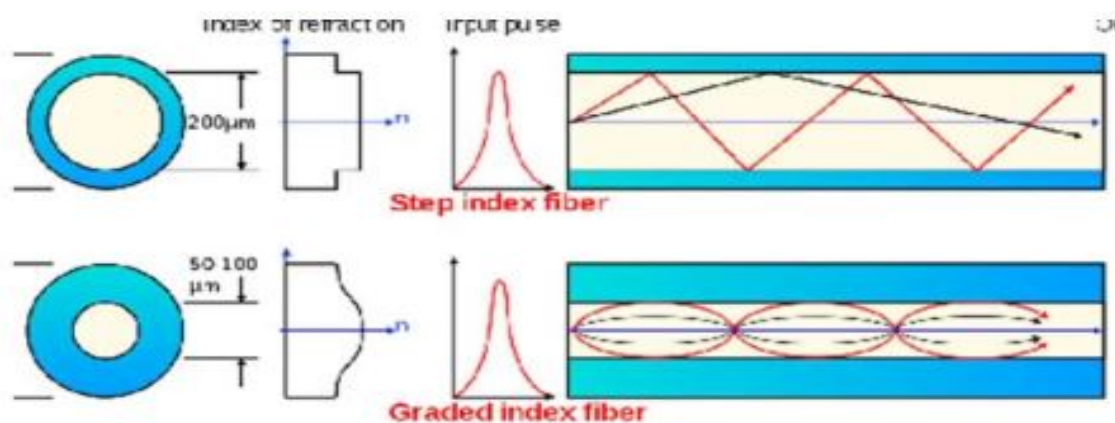
Single Mode:- Single-mode uses step-index fiber and a highly focused source of light that limits beams to a small range of angles, all close to the horizontal. The single mode fiber itself is manufactured with a much smaller diameter than that of multimode fiber, and with substantially lower density (index of refraction). It performs better than does multimode fiber over longer distances at higher transmission rates. Due to reduced core diameter all the emitted light propagates along a single path.

Multi Mode:- Multimode is so named because multiple beams from a light source move through the core in different paths. In multimode step-index fiber, the density of the core remains constant from the center to the edges. A beam of light moves through this constant density in a straight line until it reaches the interface of the core and the cladding. At the interface, there is an abrupt change due to a lower density; this alters the angle of the beam's motion. The term step index refers to the suddenness of this change, which contributes to the distortion of the signal as it passes through the fiber.



Multi Mode graded-index:-A second type of fiber, called multimode graded-index fiber, decreases this distortion of the signal through the cable. The word index here refers to the index of refraction. As we saw above, the index of refraction is related to density. A graded-index fiber, therefore, is one with varying densities. Density is highest at the center of the core and decreases gradually to its lowest at the edge.

Multi Mode step-index :-In multimode step-index fiber, the density of the core remains constant from the center to the edges. A beam of light moves through this constant density in a straight line until it reaches the interface of the core and the cladding. At the interface, there is an abrupt change due to a lower density; this alters the angle of the beam's motion. The term step index refers to the suddenness of this change, which contributes to the distortion of the signal as it passes through the fiber.



Assignment:-

- 1-Explain Propagation methods in optical fiber?
- 2-Compare fiber optics cable and coaxial cable?