

## 1. In Synchronous TDM:

- each input connect has an allotment in the output even if it is not sending data and the data flow of each input connection is divided into units.
- A round of data units from each input connection is collected into a frame, a frame is divided into n time slots and one time slot is allocated for each unit.

## In Statistical TDM:

- Slots are dynamically allocated to improve bandwidth efficiency and the number of slots in each frame is less than the number of input lines.
  - MUX checks each input line in round robin fashion. It allocates a slot for an input line if the line has data to send. Otherwise, it skips the line and checks the next line.
- The frequency hopping spread spectrum (FHSS) technique uses M different carrier frequencies that are modulated by the source signal. At one moment, the signal modulates one carrier frequency; at the next moment, the signal modulates another carrier frequency.
  - Purpose of cladding in an optical fiber increases the critical angle within the core fibre and also prevents adjacent fibres from touching each other.
  - Sky propagation is not limited in sense of distance of source and destination and not restricted by being in range or in direction with antennas. In this case, signals are sent towards space and then signals have vast range to reach receivers back to the earth. We should consider this thing, Sky is beyond the troposphere and ionosphere. When signals go beyond these spheres so when satellite will reflect those signals back, they will have much vast access to receivers.
  - Difference between omnidirectional waves and unidirectional waves

**Omnidirectional wave:** Omnidirectional in which wave travel in different direction. On the other hand, we can say also that waves go in all directions like a circle. so omnidirectional devices broadcast and receive their signals from all the direction.

**Unidirectional waves:** Unidirectional in which wave travel in one direction.

Unidirectional devices only work in one direction, and work best in limited portion of the directions. This lets them direct signal more efficiently, but only in the one direction so that has to be pointed.

- The figure below shows a demultiplexer in a synchronous TDM. If the input slot is 16 bits long (no framing bits), what is the bit stream in each output? The bits arrive at the demultiplexer as shown by the arrows.

