CHAPTER-06

MULTIPLEXING

'MULTIPLEXING' is the set of techniques that allows simultanous transmission of multiple signals through single data link.

Multiplexing

~~Transmission media~~

↳ 1. Frequency Division Multiplexing (Analog)

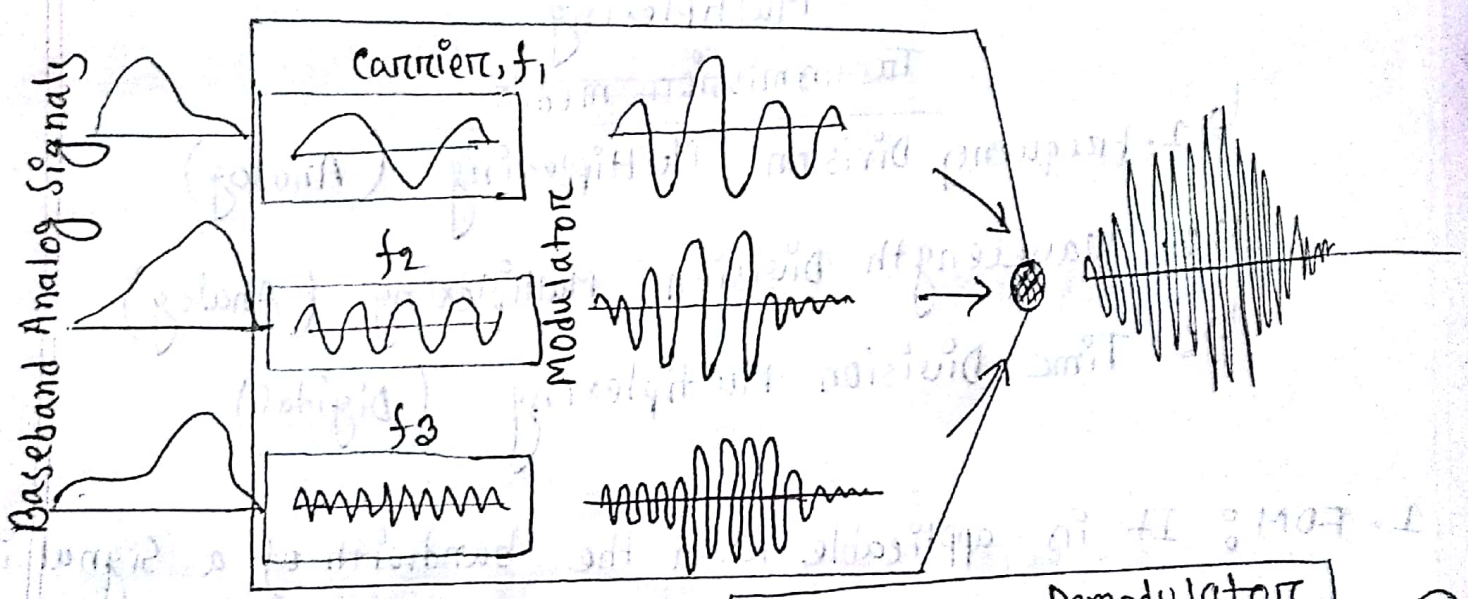
↳ 2. Wavelength Division Multiplexing (Analog)

↳ 3. Time Division Multiplexing (Digital)

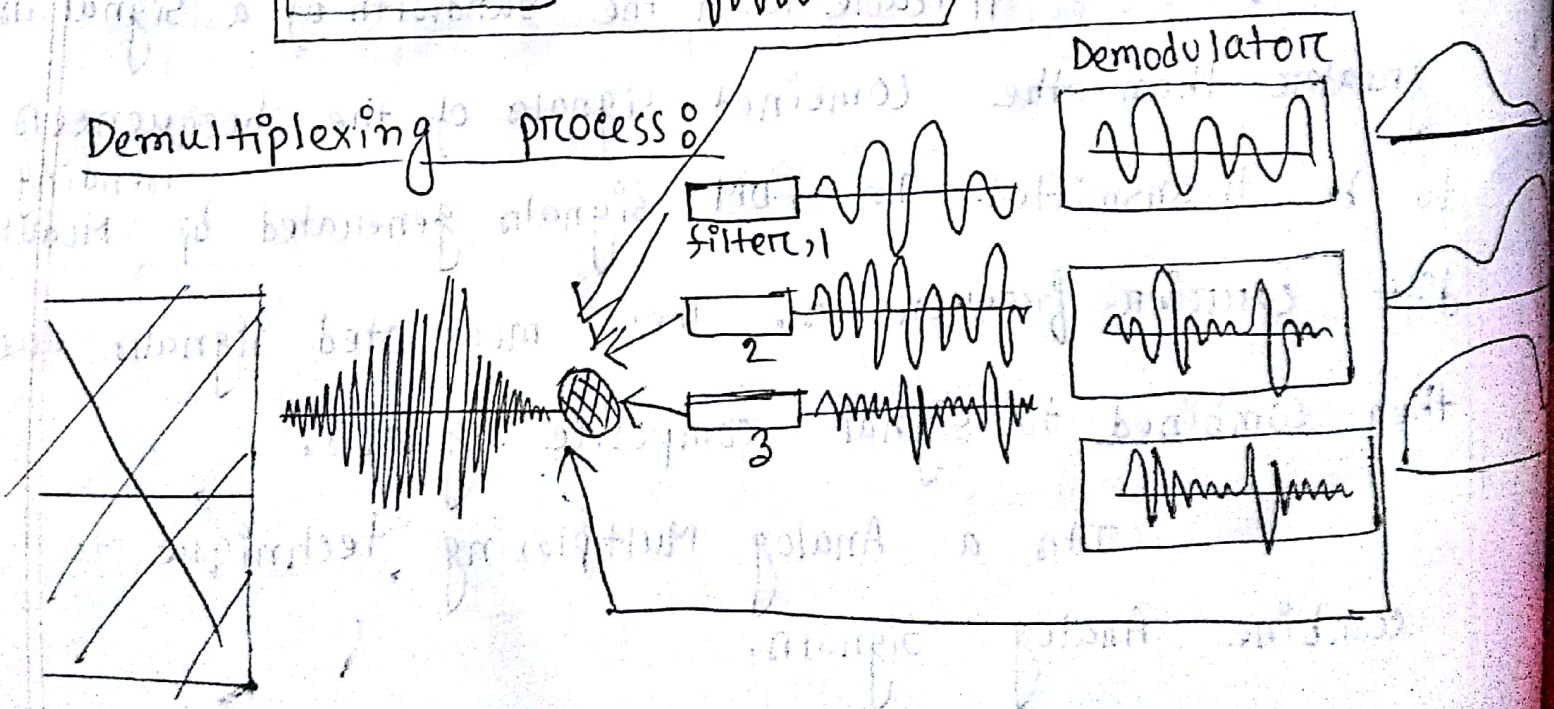
1. FDM: It is applicable when the bandwith of a signal is greater than the combined signals of the frequencies to be transmitted. In FDM signals generated by sending dev Modulated diff carrier frequencies. These modulated signals are then combined to signal composite signals.

Its a Analog Multiplexing technique to combine Analog signals.

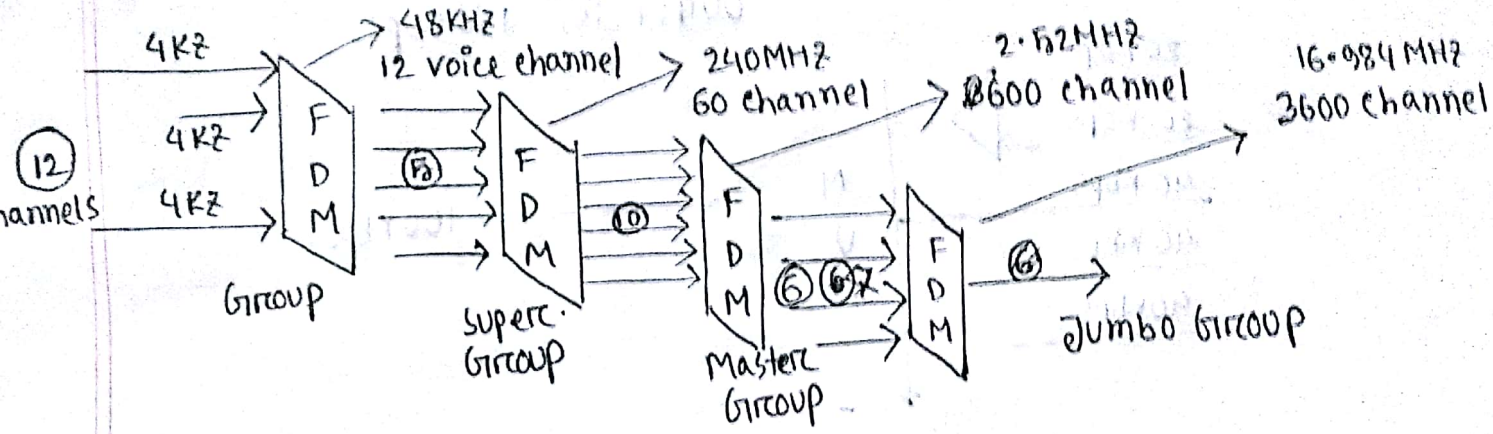
Mutiplexing process: Each source generates signal of similar frequency. These signals modulate Different carrier frequencies (f_1, f_2, f_3). They are combined to signal composite signal that is sent out over a media link that has enough bandwith to accomodate.



Demultiplexing process:

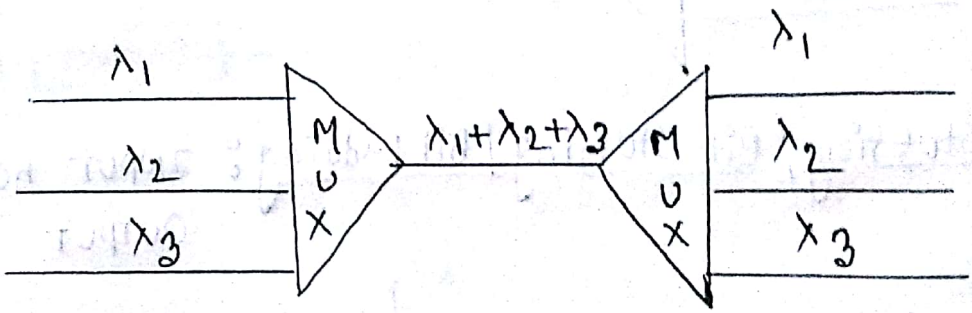


Analog Hierarchy

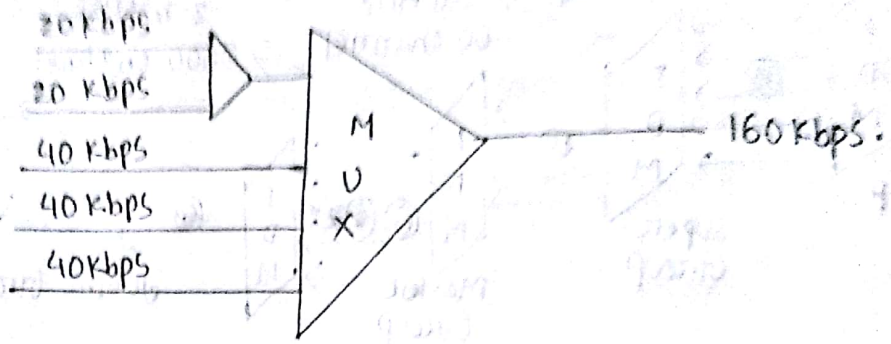


Wavelength Division Multiplexing

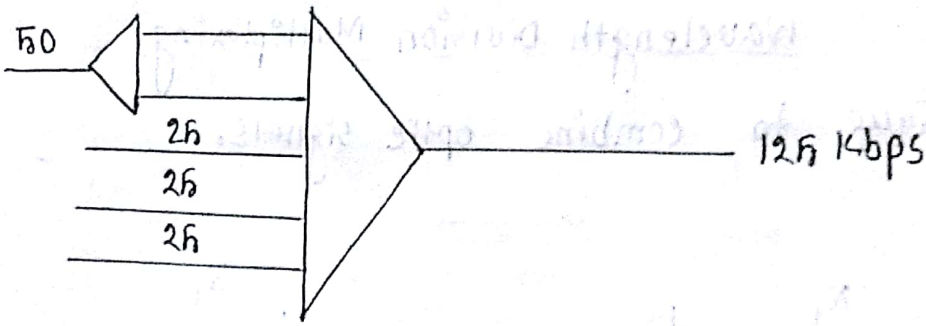
Analoge technique to combine optic signals.



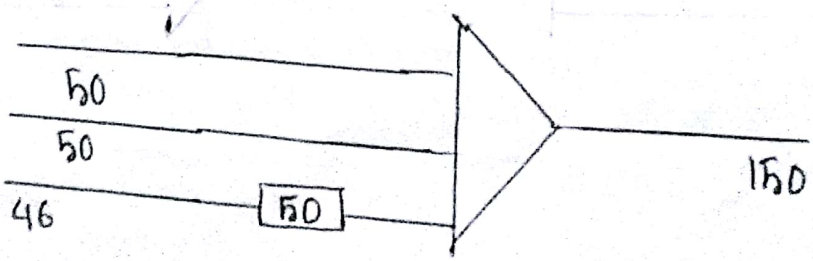
Multilevel Multiplexing: INPUT is, 20,20,40,40,40 ---
OUTPUT is, 160 Kbps.



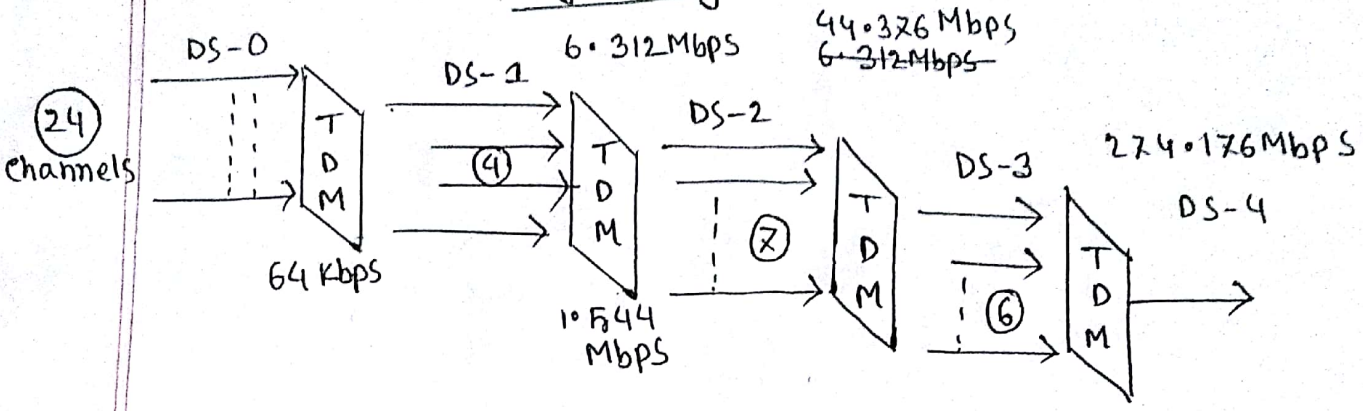
Multilevel Multiplexing: INPUT is, 50, 25, 25, 25 --- OUTPUT 125 Kbps



Pulse stuffing / Bit stuffing / Bit padding: INPUT 50, 50, 46 --
OUTPUT 150 Kbps



Digital Higherarchy



Exm-6.1 voice channel has 4KHz bandwith. Need to combine with bandwith 12 KHz. from 20-32 KHz.