Chapter 6

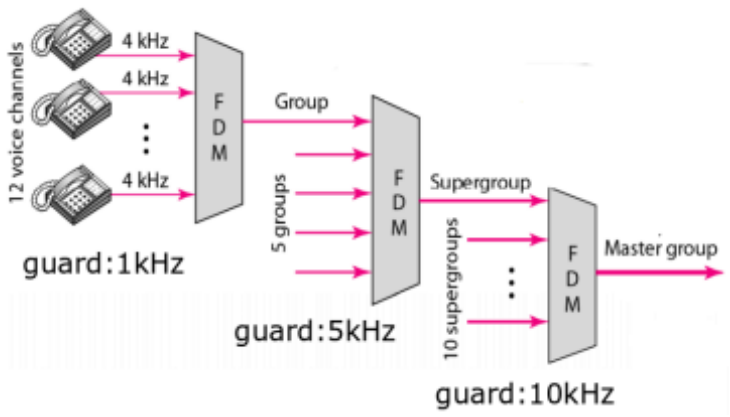
Frequency Division Multiplexing (FDM):

1. *Assume five 20KHz channels are multiplexed using FDM. If the bandwidth of each guard band is 5KHz, calculate the output channel Bandwidth*

2. *Assume we have an output channel bandwidth of 100 KHz starting from 1250KHz. There are 5 input channels. If the guard band between two channels is 5KHz, what will be the maximum bandwidth for each channel that we can assign?*

3. *Assume we have an output channel bandwidth of 100 KHz starting from 1250KHz. Assume five 20KHz channels are multiplexed using FDM. Calculate the bandwidth of the guard band.*

4. *The Following **FDM hierarchy** has been used by a telephone company. How many voice channels can be multiplexed together in the master group? What is the required bandwidth for the multiplexing?*



Time Division Multiplexing (TDM):

1. *Five channels are multiplexed using TDM. Each channel can process 1000 bits per second. if 5 bits from each channel at a time are to be multiplexed using the concept of TDM with 2 synchronizing bits, then answer the following questions.*
    a. *Input rate & input duration*
    b. *Frame rate and frame duration*
    c. *Output rate and output duration*

2. *Five channels are multiplexed using TDM. Each channel can process 1000 pages per 5 seconds. Each page has 20 lines with 40 characters. if 5 lines at a time are to be multiplexed using the concept of TDM with 5 synchronizing bits, then answer the following questions.*
    a. *Input rate & input duration*
    b. *Frame rate and frame duration*
    c. *Output rate and output duration*

3. *Five channels, three with a bit rate of 240 kbps and two with a bit rate of 220 kbps, are to be multiplexed (one bit from each channel to create a frame) with one synchronization bit. answer the following questions. a. Input rate & input duration*
    b. *Frame rate and frame duration*
    c. *Output rate and output duration*

4. *Six channels, three with a bit rate of 240 kbps and three with a bit rate of 120 kbps, are to be multiplexed. If 5 characters from each channel are to be multiplexed with three synchronization bits. answer the following questions.*
    a. *Input rate & input duration*
    b. *Frame rate and frame duration*
    c. *Output rate and output duration*
    d. *How many input channels are there after doing multiplexing?*

5. *Five channels, two with a bit rate of 240 kbps and three with a bit rate of 180 kbps, are to be multiplexed (one bit from each channel to create a frame) with one synchronization bit. answer the following questions. a. Input rate & input duration*
    b. *Frame rate and frame duration*
    c. *Output rate and output duration*
    d. *How many input channels are there after doing multiplexing?*