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Chapter V: DSL Technology  
  
The technical characteristics of a DSL link are:  
  
a)  
b)  
  
d)  
  
— Symmetric access  
  
— Modulation: DMT  
  
— Modulation for each channel: QAM128  
  
— Channel width 4.3125 kHz  
  
— Sampling frequency: 35.328 MHz  
  
— Symbol rate: 4000 symbols/s/channel  
  
— Baseband analog voice  
  
— Five guard bands between analog voice and uplink  
  
— No guard bands between uplink and downlink  
  
— FDMtechnology  
  
How many channels has this link?  
  
Find the total number of samples corresponding to the cyclic prefix and synchronization of this link.  
Calculate the bitrates of this link  
  
Find the frequency separating the uplink and downlink channels.  
  
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= Chapter V: DSL Technology  
  
Exercise Il  
  
The basic frames of a DSL link, containing each 32 payload bytes, are  
  
transmitted in blocks of 4 multiframes, each multiframe is formed by 12 basic  
  
frames. These frames carry payload information and overheads for framing,  
control and management functions.  
  
a) Knowing that the overall duration of each block is 6 ms, calculate the useful  
throughput of this link.  
  
b) If 4-PAM Modulation is used in this link, calculate the number of total  
overhead bytes per block knowing that the symbol rate is 1160 ksymbols/s.  
Find the bit rate corresponding to this overhead.  
  
c) What is the type of this DSL link?  
  
d) Does this DSL Link allow to make telephone calls? Explain