1.

Show an illustration that shows what that connection looks like. You may show the Internet and the phone network as a “cloud” (i.e., no internal details required).

a.

The voice information for this phone call can be carried in three forms: analog, digital in the phone network, and digital on the Internet. State the order in which form the voice information for this call is transferred.

b. From phone 1 the analog signal from our voice is captured as digital through the VoIP adapter and the internet, then it travels to the analog telephone network, then back into the digital internet to the phone through the VoIP adapter and sent out to our ear as analog.

32 MHz – 33 MHz

2a The labels for this frequency range are FIXED and MOBILE

2b the 2 frequency allocations are not all the same so when communicating over borders if you don’t change frequencies then it may not be in the allocated frequencies. Some do overlap so a potential fix could be to work in that small overlapping frequency allocation. A more general fix would be to have a middleman adapting the frequency to work in both nations.

3a. 849.932 MHz - 850.068 MHz

1/3125 seconds the frequencies will be 180 degrees out of shift

You can send 409.6 bits before the frequencies are 90 degrees out of shift

4. a 00001101

b

C If you were sending 100000 bits of the same value (0) then the clocks would have to be in perfect sync to not lose a bit, if you use amplitude shift keying or frequency shift keying then there would be no problem because you could count the number of oscillations

5 a when 1 3-bit number is transmitted incorrectly it will always be able to detect it, but once more than one is incorrectly sent over, it will not be able to be correct 100% of the time. One 3- bit number can be incorrectly sent as a value 1 higher and another can be sent as 1 lower, then it wont be able to catch that incorrect transmission. So the maximum number of bit errors the message can have is 3, as long as they are all part of the same 3-bit number.

b

I do not believe that this error detection mechanism works well because it can only work with a limited number of errors, if there is ever more than one number with a bit error, there is a chance that it will not be caught.

6

If both signals arrive at the receiver with no distance difference, then there will be constructive interference, if delta d needs to be larger than 0 then the smallest value is .375 m because that is the length of one wavelength

One wavelength is .375 m so the smallest distance with destructive interference is .1875 m

The phase difference @ 10m is 118 degrees 10/.375 = 26.666... 180\*.666 = 118