1. The Nyquist theorem is true for both copper wires and optical fibers. All of them are channels. In the case of optical fibers, this refers to the maximum frequency of the optical signal that can be transmitted through the fiber without distortion.
2. Since wpsoffice,maximum frequency is 30GHz, minimum frequency is 60MHz.
3. there are 6 necklaces, each necklace have 11 satellite. We can assume that a period is divided into 11 parts.the average interval for handoffs is 90/11 min.
4. the pipeline is a half-duplex system, because it can transmit the oil from any end to another. But can only transmit in one direction at the same time.

5.1)bit rate =1200 baud\*4=4800bits/s

1. it only change the value in one dimension(amp), so it is amplitude modulation.
2. It uses phase modulation

6.there are two, one for uplink another for downlink.

1. the message is completely received by the router, however in packet switching, the data is split and received separately.
2. the time spent in circuit switching Tc=s + kd + x/b

the time spent in packet switching is Tp=k\*d + (k-1)p/b+kd

When Tp<Tc ==> s>(k-1)p/b

9.each cell have 6 neighbors, need three group of frequencies so it can use at most 280 frequencies.

10.cause the cellphone must disconnect from a base station first and then switch to another one. When the interval is a bit high sometimes the carrier will think that the user is offline and cutoff the call.