

Chapter3

5 Add a 0 after five 1, we get 011110111110011111010

14 $10100001000/1001=10110111.....0111, x^2+x+1$

16 CRC need to calculate the total data, if we put it in the header, we will have to calculate the total data before transmitting, but if we put CRC in the end, we can transmit the former data while calculating CRC, which is more efficient.

29 $1000\text{bits}/1\text{mbps} = 1\text{ms}$, so the cycle is $(1+270)*2=542\text{ms}$,

(a) Utilization: $1/542 = 0.1845\%$

(b) Utilization: $7/542 = 1.29\%$

(c) Utilization: $4/542 = 0.738\%$

37 ppp frame at least has 1 byte flag, 1 byte protocol, 2 byte checksum, 1 byte flag, total 5 bytes overhead.

Chapter4

2 Pure ALOHA biggest efficiency is about 0.184, so the bandwidth is $56*0.184=10.304$, each station requires $1000/100=10\text{bps}$, so $10304/10 = 1030$, at most 1030 stations.

17



21 $1/200000=5\mu\text{s}$, in a circle is $10\mu\text{s}$, $1\text{ Gbps}*10\mu\text{s} = 10000\text{bits}$, so the minimum frame size is 10000bits.

22 frame size = header size + ip size = $18 + 60 = 78 > 64$, so padding is not needed.

43 In store-and-forward switches, we get the whole frame, and examines it before forward, but in cut-through we forward the frame before it has arrived totally, so the frame has already forward, before we examined a error.