Source — R — Sink

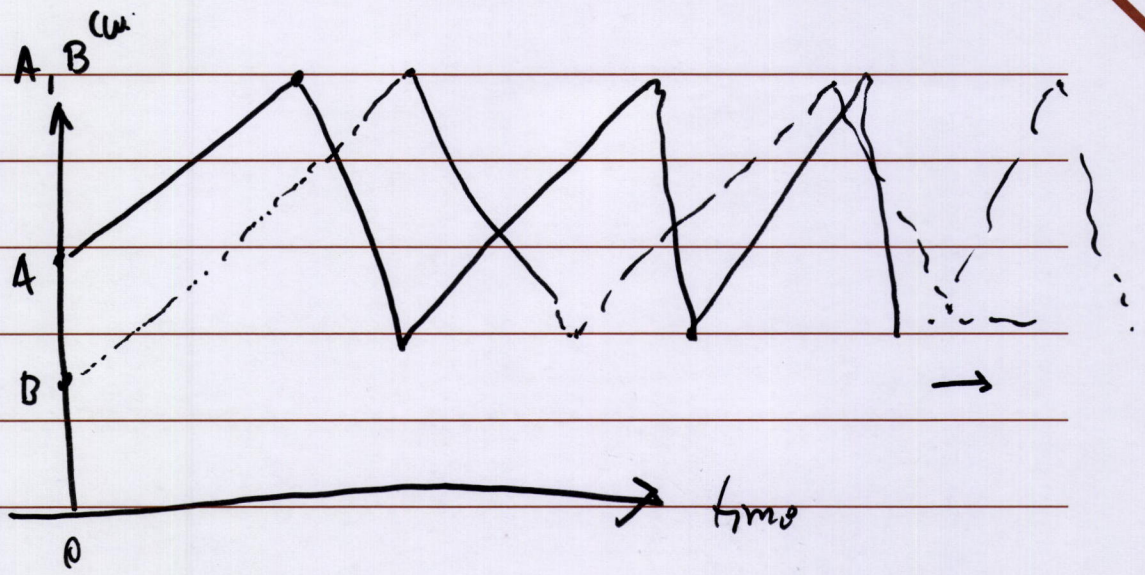
Q.5. (in msec)

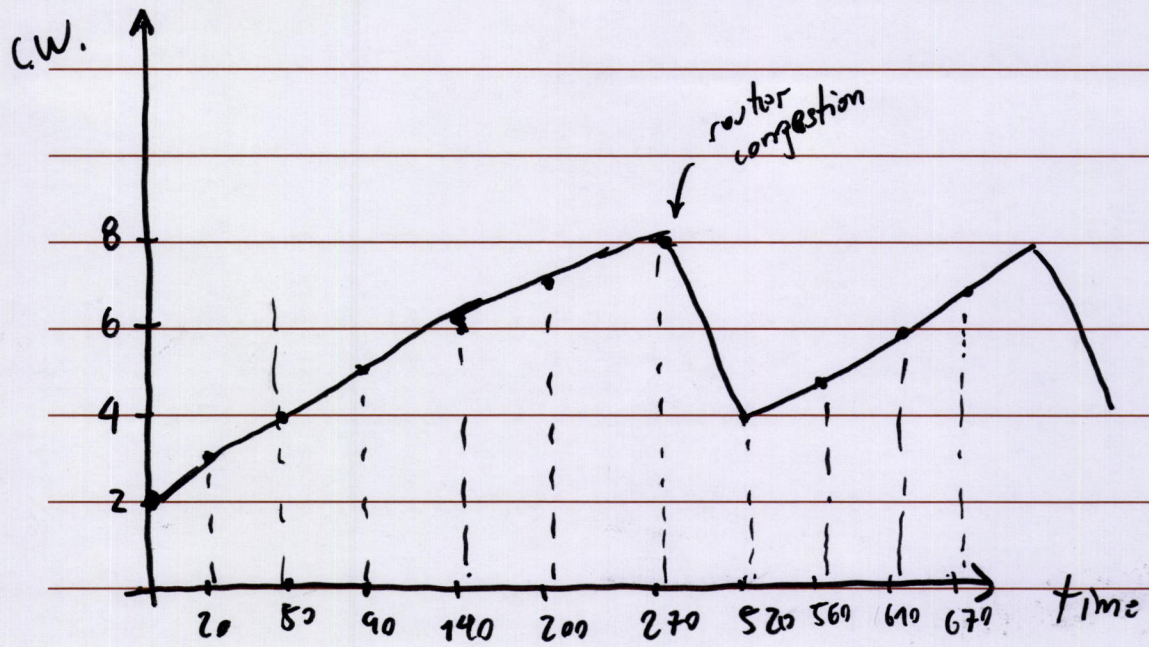
time	cw	RTT	time to send	Packets sent
AIMD	0	2	20	20	[0,1]
MSS: 1 kByte	20	3	30	50	[2,4]
timeout:	50	4	40	90	[5,8]
250 msec	90	5	50	140	[9,13]
Router	140	6	60	200	[14,19] (a) 200 msec //
queue:	200	7	70	270	[20,26]
7 pkts	270	8	timeout	(250) +270	[27,34] (34 lost)
serv.	520	4	40	560	[34,37]
time: 10 msec	560	5	50	610	[38,42]
	610	6	60	670	[43,48]
	670	7	70	740	[49,55]
	740	8	timeout	250+740	[56,63] (63 lost)
	990	4	40	1030	[63,66]

cycle: 740 − 270 = 470 msec } 29 pkts (30 pkt sent / 1 pkt lost)

(b) 10 MByte = 10240 packets ; 10240 pkt / 29 pkt/cycle

$$\Rightarrow 10240 \text{ pkts} \times \frac{1}{29 \frac{\text{pkts}}{\text{cycle}}} \times 470 \frac{\text{msec}}{\text{cycle}} \approx 160 \text{ sec} //$$


A, B
cw
A
B
0
time



Q.1.

		initial cwnd	end cwnd.	
a)	1st RTT	5 MSS	6 MSS	6 RTTs //
	2nd "	6 MSS	7 MSS	
	⋮	⋮	⋮	
	nth RTT	10 MSS	11 MSS ← 6th RTT	

b) 1st RTT : 5 pkts
2nd " : 6 "
⋮ ⋮
6th RTT : 10 "

throughput: $\frac{5+6+\dots+10}{6\ \text{RTTs}} = \frac{45\ \text{MSS}}{6\ \text{RTTs}}$

$= 7.5\ \frac{\text{MSS}}{\text{RTT}}$ //