~~App layer~~ CH1 HM

Fatbardh Ibrahimi
127944

P5) b) For eight cars

$12 * 3 * 8 = 288$s that is 4.8 min

Propagation speed 100 km/h

Distance 150 km

$150/100 = 1.5$h that is 90 min

End to end delay = $90 + 4.8 = 94.8$ min

P6) g)

$S = 2.5 * 10^8$

$L = 120$ bit

$R = 56$ kbps

$m = \frac{L}{R} s = \frac{120}{56 \times 10^3} (2.5 \times 10^8) = 536$

P25) a) 20 000 km $= 2 * 10^7$ m

2 Mbs $= 2 * 10^6$ bps

d) Propagation speed $2.5 * 10^8$ m/s

$d_{prog} = \frac{D}{S} = \frac{2 * 10^7}{2.5 * 10^8} = 0.08$ s

Band-width delay:

$R \times d_{prog} = 2 * 10^6 * 0.008 = 16 * 10^4$ bits

b) $800000 \text{ bits} = 8 * 10^5 \text{ bits}$

$2 \text{ mbs} = 2 * 10^6 \text{ bps}$

Bandwidth delay:

$R * d_{prop} = 2 * 10^6 * 0.08 = 16 * 10^4 \text{ bits}$

The maximum number of bits that will be in the link at any given time is 160000 bits.

c) Band-width delay is equal withe the maximum bit number of transmision rate.

d) $2 \text{ Mbs} = 2 * 10^6 \text{ bps}$

$2.5 * 10^8 \text{ m/s}$

$$m = \frac{2.5 * 10^8}{2 * 10^6} = 125 \text{ m/bit.}$$

P 29) a)

Distance between satellite and Earth $= 3.6 * 10^7 \text{ m}$

Propagation speed $= 2.4 * 10^8$

Transmission rate $= 10 \text{ mbs}$

$$\frac{d}{s} = \frac{3.6 * 10^7 \text{m}}{2.4 * 10^8 \text{ m/s}} = 0.15 \text{ s}$$

b) $R = 10 \text{ mbs} = 10 * 10^6 = 10^7 \text{ bits}$

$d = 0.15 \text{ s}$

$R * d_{prop} = 10^7 * 0.15 = 1500000 \text{ bits}$