1.P8

a. $3Mbps \div 150kbps = 3000 \div 150 = 20$

b. $P_1 = 10$

c. $P_2 = C_{120}^{n} \cdot 0.1^{n} \cdot 0.9^{120-n}$

d. $P_3 = 1 - \sum_{k=0}^{20} C_{120}^{k} \cdot 0.1^{k} \cdot 0.9^{120-k}$

2.P7

$56byte \times 8bit \div 64kbps = 7ms$

$56byte \times 8bit \div 2Mbps = 0.224ms$

$7ms + 0.224ms + 10ms = 17.224ms$

3.P9

a. $N = \frac{1Gbps}{100kbps} = 10^4$

b. $P = \sum_{n=N+1}^{M} C_{n}^{M} \cdot p^{n} \cdot (1-p)^{M-n}$