

Tutorial 11 Solution

Question 1

(a)

$$X = 10,000 \text{ bits}/25 \text{ Mbps} = 0.4 \text{ msec}$$

$$\rho_{\max} = 1 = \lambda X$$

$$\lambda = 1/X = 2,500 \text{ frames/sec}$$

(b)

$$\tau' = (M \times 2 \times 100/2 \times 10^8) + (M \times 8/25 \times 10^6) = 1.32 \times 10^{-6}M$$

$$a' = \tau'/X = 3.3 \times 10^{-3}M$$

$$\rho_{\max} = 1/(1 + a'/M) = 0.997$$

$$\lambda = 0.997/X = 2,492 \text{ frames/sec}$$

Question 2

The querying host does not know the MAC address corresponding to the IP address.

The responding host knows the MAC address of the querying host.

Question 3

(a)

ARP table in 111.111.111.110

IP address	MAC address
111.111.111.111	74-29-9C-E8-FF-55
111.111.111.112	CC-49-DE-D0-AB-7D

ARP table in 222.222.222.220

IP address	MAC address
222.222.222.222	49-BD-D2-C7-56-2A
222.222.222.221	88-B2-2F-54-1A-0F

(b)

Source IP address = 222.222.222.222

Destination IP address = 111.111.111.111

Source MAC address = 49-BD-D2-C7-56-2A

Destination MAC address = 1A-23-F9-CD-06-9B