

12. Match the layers—Link, Network, and Transport—with the guarantees that each layer could provide to higher layers.

Guarantee	Layer
Best effort delivery	Network
Reliable Delivery	Transport
In-order Delivery	Transport
Byte-stream abstraction	Transport
Point-to-point link abstraction	Data link

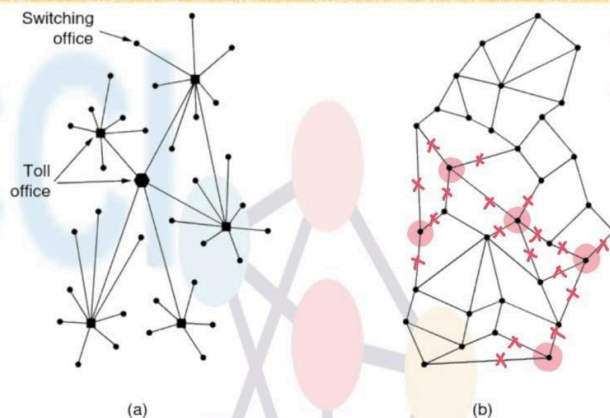
13. Suppose that two network endpoints have a round-trip time of 100 milliseconds, and that the sender transmits five packets every round trip. What will be the sender's transmission rate for this round-trip time, assuming 1500-byte packets? Give your answer in bytes per second

Round trip time =  $100\text{ms} = 0.1\text{s}$   
 Sender  $\rightarrow$  5 packets every RTT  
 Size of each packet = 1500 bytes  
 Data transmitted in one RTT  

$$= \text{packets} \cdot \text{Size per Packet}$$

$$= 5 \cdot 1500$$

$$= 7500 \text{ bytes}$$
 Transmission rate =  $\frac{7500 \text{ bytes}}{0.1\text{s}} = 75,000 \text{ bytes/s}$



25. The subnet of Fig. 1-12(b) was designed to withstand a nuclear war. How many bombs would it take to partition the nodes into two disconnected sets? Assume that any bomb wipes out a node and all of the links connected to it.

5 bombs!