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 ms = 0,1 s

Sender → 5 packets every RTT

Size of each packet = 1500 bytes

$$\text{Transmission rate} = \frac{7500 \text{ bytes}}{0,1 s} = 75,000 \text{ bytes/s}$$

Data transmitted in one RTT

= packets · Size per Packet

= 5 · 1500

= 7500 bytes

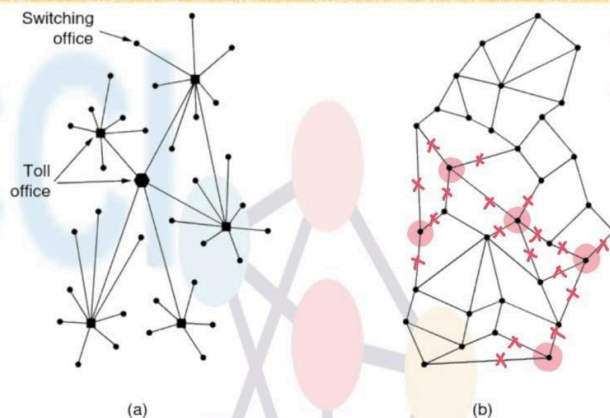Switching office

Toll office

→ 5 bombs!

(a)   (b)

Figure 1-12. (a) Structure of the telephone system. (b) Baran's proposal.

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.