

1. End systems, packet switches, and other pieces of the Internet *all* run protocols that control the sending and receiving of information within the Internet.  
A. true B. false
2. *All* activity in the Internet that involves two or more communicating remote entities is governed by a protocol.  
A. true B. false
3. Which of the following protocol(s) define today's Internet architecture?
  - A. SMTP, DNS
  - B. TCP, UDP
  - C. routing protocols
  - D. IP
4. Which of the following protocol(s) is (are) not defined by some RFC?
  - A. TCP
  - B. IP
  - C. HTTP
  - D. Skype
5. The network edge of the Internet is often referred to as end systems or hosts.  
A. true B. false
6. The network core is the mesh of packet switches and links that interconnects the Internet's edge.  
A. true B. false
7. Among packet-switching and circuit-switching, packet-switching turns out to be the winning principle that powers the Internet because packet-switching is always better than circuit-switching.  
A. true B. false
8. In store-and-forward transmission, a switch must buffer a packet's bits because the packet switch must receive the entire packet before it can begin to send the first bit of the packet.  
A. true B. false
9. Telephone company often uses packet switching for the expensive overseas portion of a telephone call.  
A. true B. false
10. Google, by creating its private network, bypasses the upper tiers of the Internet, reduces its payment, and achieves greater control of how its services are delivered.  
A. true B. false

11. Traffic intensity ( $La/R$ ) is the ratio of traffic arrival rate ( $La$ ) and transmission rate ( $R$ ). The golden rule of traffic engineering is: Design your system so that the traffic intensity is no greater than 1.  
A. true   B. false
12. If packets arrive periodically (not bursts), then every packet will arrive at an empty queue without incurring any queueing delay.  
A. true   B. false
13. Consider a network of  $N$  links, with the transmission rates of the  $N$  links being  $R_1, R_2, \dots, R_N$ . The throughput for a file transfer in the network will be  $\min\{R_1, R_2, \dots, R_N\}$ .  
A. true   B. false
14. *traceroute* is a program that can run in any Internet host. Given a certain destination host, it probes all the routers along the path to that destination, generating round-trip delays for all those intermediary routers. The round-trip delay to the  $n$ th router, however, can be greater than the  $n + 1$ th router. This is because the \_\_\_\_\_ can be varying with time.  
A. transmission delay  
B. processing delay  
C. queueing delay  
D. propagation delay
15. A layered architecture enables a networked system to remain unchanged when a layer's implementation is changed.  
A. true   B. false
16. Which layer(s) in the Internet protocol stack does a router *not* process?  
A. application layer  
B. physical layer  
C. transport layer  
D. all of the above