

COM-208: Computer Networks - Quiz 4 (A)

Full Name:
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1. A forwarding table is a data structure that helps:
 - (a) A network-layer device (e.g., an IP router) determine how to forward a packet. *(Correct)*
 - (b) A routing algorithm identify the best path to a given destination.
 - (c) An end-system keep track of its active TCP connections.
2. Which of the following statements about forwarding and routing (as defined in class) is true:
 - (a) They are the same thing.
 - (b) Routing populates the data structures used by forwarding. *(Correct)*
 - (c) Forwarding populates the data structures used by routing.
3. The purpose of a link-state routing algorithm is to learn:
 - (a) The least-cost path from a given router to every other router in the network. *(Correct)*
 - (b) The state of all the links in the network.
 - (c) Which are the fastest links in the network.
4. The Internet architecture allows for different networks to be autonomous in the following sense:
 - (a) Each Autonomous Systems (AS) can run any intra-domain routing protocol it wants. *(Correct)*
 - (b) Each AS can run any inter-domain routing protocol it wants.
 - (c) Both of the above.
5. When a NAT gateway receives a packet coming from its local (private) network, it rewrites:
 - (a) Only the source IP address.
 - (b) The source IP address and source port number. *(Correct)*
 - (c) The destination IP address and destination port number.
6. IP prefix 5.0.0.0/8 exactly contains the following IP addresses:
 - (a) From 5.0.0.0 to 5.0.0.8.
 - (b) From 5.0.0.0 to 5.0.0.255.
 - (c) From 5.0.0.0 to 5.255.255.255. *(Correct)*
7. In a virtual-circuit network, network-layer devices keep the following state:
 - (a) None.
 - (b) Per Internet IP prefix.
 - (c) Per pair of communicating end-systems. *(Correct)*
8. The forwarding table of an IP router maps IP prefix 5.0.0.0/8 to output link 2. What will the router do if it receives a packet with destination IP address 5.0.0.1?
 - (a) It will send it out link 2.
 - (b) It will send it out link 2 unless there is another entry in the forwarding table that provides a longer match. *(Correct)*
 - (c) It will send it out link 2 with a very high probability.
9. Routers *a*, *b*, and *c* are participating in Bellman-Ford (BF) routing. In router *a*'s BF data structure, there is a poisoned reverse on the path from router *b* to router *c*. This means that:
 - (a) Router *a* has no path to router *b*.
 - (b) Router *b* has no path to router *c*.
 - (c) Router *b* routes (has a path) to router *c* through router *a*. *(Correct)*
10. In general, we expect the size of the forwarding tables of IP routers to grow with:
 - (a) The number of active TCP connections on the Internet.
 - (b) The number of IP addresses on the Internet.
 - (c) The number of externally advertized IP prefixes on the Internet. *(Correct)*