

All the Multiple Choice Question and Answer (MCQs) have been compiled from the books of Data Communication and Networking by the well known author behrouz A forouzan.

This Data Communication and Networking – **Network Layer: Delivery, Forwarding, and Routing** multiple choice Questions and Answers (MCQ) PDF covers the below lists of topics.

1. Transport-layer protocols,UDP and TCP Multiple Choice Question and Answer.
2. Transmission Control Protocol (TCP) Multiple Choice Question and Answer.

Practice now to sharpen your concept.

1. In _____ delivery, both the deliverer of the IP packet and the destination are on the same network.

- A. a connectionless
- B. a direct
- C. an indirect
- D. none of the above

2. In _____ delivery, the deliverer of the IP packet and the destination are on different networks

- A. a connection-oriented
- B. a direct
- C. an indirect
- D. none of the above

3. In _____ forwarding, the full IP address of a destination is given in the routing table.

- A. next-hop
- B. network-specific
- C. host-specific
- D. default

4. In _____ forwarding, the mask and destination addresses are both 0.0.0.0 in the routing table

- A. next-hop
- B. network-specific
- C. host-specific
- D. default

5. In _____ forwarding, the destination address is a network address in the routing table

- A. next-hop
- B. network-specific
- C. host-specific
- D. default

6. In _____ forwarding, the routing table holds the address of just the next hop instead of complete route information.

- A. next-hop
- B. network-specific
- C. host-specific
- D. default

7. The idea of address aggregation was designed to alleviate the increase in routing table entries when using _____

- A. classful addressing

- B. classless addressing
- C. both a and b
- D. none of the above

8. The principle of _____ states that the routing table is sorted from the longest mask to the shortest mask

- A. first mask matching
- B. shortest mask matching
- C. longest mask matching
- D. none of the above

9. The use of hierarchy in routing tables can _____ the size of the routing tables

- A. reduce
- B. increase
- C. both a and b
- D. none of the above

10. _____ deals with the issues of creating and maintaining routing tables.

- A. Forwarding
- B. Routing
- C. Directing
- D. None of the above

Answer key for MCQ SET- 1	
Q-1	Correct Answer :a direct
Q-2	Correct Answer :an indirect
Q-3	Correct Answer :host-specific

Q-4	Correct Answer :default
Q-5	Correct Answer :network-specific
Q-6	Correct Answer :next-hop
Q-7	Correct Answer :classless addressing
Q-8	Correct Answer :longest mask matching
Q-9	Correct Answer :reduce
Q-10	Correct Answer :Routing

Network Layer: Delivery, Forwarding, and Routing MCQ Set-2

- 1. A _____ routing table contains information entered manually.**
 - A. static
 - B. dynamic
 - C. hierarchical
 - D. none of the above

- 2. A _____ routing table is updated periodically using one of the dynamic routing protocols**
 - A. static
 - B. dynamic
 - C. hierarchical
 - D. none of the above

- 3. The input and output ports of a router perform the _____ layer functions of the router.**
 - A. physical and data link
 - B. network
 - C. transport
 - D. none of the above

4. The routing processor of a router performs the _____ layer functions of the router

- A. physical and data link
- B. network
- C. transport
- D. none of the above

5. The task of moving the packet from the input queue to the output queue in a router is done by _____

- A. input and output ports
- B. routing processor
- C. switching fabrics
- D. none of the above

6. A static table is one _____

- A. with manual entries
- B. which is updated automatically
- C. either a or b
- D. none of the above

7. A dynamic table is one _____

- A. with manual entries
- B. which is updated automatically
- C. either a or b
- D. none of the above

8. For purposes of routing, the Internet is divided into _____

- A. wide area networks

- B. autonomous networks
- C. autonomous systems
- D. none of the above

9. _____ is a group of networks and routers under the authority of a single administration.

- A. An autonomous system
- B. An area
- C. a and b
- D. none of the above

10. Routing inside an autonomous system is referred to as

- A. interdomain routing
- B. intradomain routing
- C. both a and b
- D. none of the above

Answer key for MCQ SET- 2	
Q-1	Correct Answer :static
Q-2	Correct Answer :dynamic
Q-3	Correct Answer :physical and data link
Q-4	Correct Answer :network
Q-5	Correct Answer :switching fabrics
Q-6	Correct Answer :with manual entries
Q-7	Correct Answer :which is updated automatically
Q-8	Correct Answer :autonomous systems
Q-9	Correct Answer :An autonomous system
Q-10	Correct Answer :intradomain routing

Network Layer: Delivery, Forwarding, and Routing MCQ Set-3

1. Routing between autonomous systems is referred to as

-
- A. interdomain routing
 - B. intradomain routing
 - C. both a and b
 - D. none of the above

2. In _____ routing, the least cost route between any two nodes is the route with the minimum distance.

- A. path vector
- B. distance vector
- C. link state
- D. none of the above

3. In _____, each node maintains a vector (table) of minimum distances to every node.

- A. path vector
- B. distance vector
- C. link state
- D. none of the above

4. In distance vector routing, each node periodically shares its routing table with _____ and whenever there is a change.

- A. every other node
- B. its immediate neighbors

- C. one neighbor
- D. none of the above

5. The Routing Information Protocol (RIP) is an intradomain routing based on _____ routing

- A. distance vector
- B. link state
- C. path vector
- D. none of the above

6. The metric used by _____ is the hop count

- A. OSPF
- B. RIP
- C. BGP
- D. none of the above

7. The _____ routing uses the Dijkstra algorithm to build a routing table.

- A. distance vector
- B. link state
- C. path vector
- D. none of the above

8. The Open Shortest Path First (OSPF) protocol is an intradomain routing protocol based on _____ routing

- A. distance vector
- B. link state
- C. path vector
- D. none of the above

9. The _____ protocol allows the administrator to assign a cost, called the metric, to each route

- A. OSPF
- B. RIP
- C. BGP
- D. none of the above

10. In OSPF, a _____ link connects two routers without any other host or router in between

- A. point-to-point
- B. transient
- C. stub
- D. none of the above

Answer key for MCQ SET- 3	
Q-1	Correct Answer :interdomain routing
Q-2	Correct Answer :distance vector
Q-3	Correct Answer :distance vector
Q-4	Correct Answer :its immediate neighbors
Q-5	Correct Answer :distance vector
Q-6	Correct Answer :RIP
Q-7	Correct Answer :link state
Q-8	Correct Answer :link state
Q-9	Correct Answer :OSPF
Q-10	Correct Answer :point-to-point

Network Layer: Delivery, Forwarding, and Routing MCQ Set-4

- 1. In OSPF, a _____ link is a network with several routers attached to it.**
 - A. point-to-point
 - B. transient
 - C. stub
 - D. none of the above

- 2. In OSPF, a _____ link is a network is connected to only one router.**
 - A. point-to-point
 - B. transient
 - C. stub
 - D. none of the above

- 3. In OSPF, when the link between two routers is broken, the administration may create a _____ link between them using a longer path that probably goes through several routers**
 - A. point-to-point
 - B. transient
 - C. stub
 - D. none of the above

- 4. In _____ routing, we assume that there is one node (or more) in each autonomous system that acts on behalf of the entire autonomous system**
 - A. distant vector
 - B. path vector
 - C. link state
 - D. none of the above

5. _____ is an interdomain routing protocol using path vector routing

- A. BGP
- B. RIP
- C. OSPF
- D. none of the above

6. To create a neighborhood relationship, a router running BGP sends an _____ message

- A. open
- B. update
- C. keepalive
- D. none of the above

7. An area is _____

- A. part of an AS
- B. composed of at least two ASs
- C. another term for an AS
- D. none of the above

8. A one-to-all communication between one source and all hosts on a network is classified as a _____ communication.

- A. unicast
- B. multicast
- C. broadcast
- D. none of the above

9. A one-to-many communication between one source and a specific group of hosts is classified as a _____ communication.

- A. unicast
- B. multicast
- C. broadcast
- D. none of the above

10. A one-to-one communication between one source and one destination is classified as a _____ communication.

- A. unicast
- B. multicast
- C. broadcast
- D. none of the above

Answer key for MCQ SET- 4	
Q-1	Correct Answer :transient
Q-2	Correct Answer :stub
Q-3	Correct Answer :none of the above
Q-4	Correct Answer :path vector
Q-5	Correct Answer :BGP
Q-6	Correct Answer :open
Q-7	Correct Answer :part of an AS
Q-8	Correct Answer :broadcast
Q-9	Correct Answer :multicast
Q-10	Correct Answer :unicast

Network Layer: Delivery, Forwarding, and Routing MCQ Set-5

1. In _____, the router forwards the received packet through only one of its interfaces.

- A. unicasting
- B. multicasting
- C. broadcasting
- D. none of the above

2. In _____, the router may forward the received packet through several of its interfaces

- A. unicasting
- B. multicasting
- C. broadcasting
- D. none of the above

3. Emulation of _____ through _____ is not efficient and may create long delays.

- A. unicasting; multiple unicasting
- B. multicasting; multiple unicasting
- C. broadcasting; multicasting
- D. none of the above

4. In unicast routing, each router in the domain has a table that defines a _____ path tree to possible destinations

- A. average
- B. longest
- C. shortest
- D. none of the above

5. In multicast routing, each involved router needs to construct a _____ path tree for each group.

- A. average
- B. longest

- C. shortest
- D. none of the above

6. In the _____ tree approach, each router needs to have one shortest path tree for each group.

- A. group-shared
- B. source-based
- C. a or b
- D. none of the above

7. In the group-shared tree approach, _____ involved in multicasting

- A. only the core router is
- B. all routers are
- C. only some routers are
- D. none of the above

8. Multicast link state routing uses the _____ tree approach

- A. source-based
- B. group-shared
- C. a or b
- D. none of the above

9. The Multicast Open Shortest Path First (MOSPF) protocol is an extension of the OSPF protocol that uses multicast routing to create source-based trees. The protocol is based on _____ routing

- A. distance vector
- B. link state
- C. path vector
- D. none of the above

10. MOSPF is a _____ protocol

- A. data-driven
- B. command-driven
- C. both a and b
- D. none of the above

Answer key for MCQ SET- 5	
Q-1	Correct Answer :unicasting
Q-2	Correct Answer :multicasting
Q-3	Correct Answer :multicasting; multiple unicasting
Q-4	Correct Answer :shortest
Q-5	Correct Answer :shortest
Q-6	Correct Answer :source-based
Q-7	Correct Answer :only the core router is
Q-8	Correct Answer :source-based
Q-9	Correct Answer :link state
Q-10	Correct Answer :data-driven

Network Layer: Delivery, Forwarding, and Routing MCQ Set-6

1. _____ broadcasts packets, but creates loops in the systems.

- A. Forwarding
- B. Flooding
- C. Backwarding
- D. none of the above

2. In RPF, a router forwards only the copy that has traveled the _____ path from the source to the router.

- A. shortest
- B. longest
- C. average
- D. none of the above

3. RPF eliminates the _____ in the flooding process

- A. forwarding
- B. backwarding
- C. flooding
- D. none of the above

4. RPF guarantees that each network receives only _____ of the multicast packet.

- A. one copy
- B. two copies
- C. a or b
- D. none of the above

5. RPB creates a shortest path _____ tree from the source to each destination

- A. unicast
- B. multicast
- C. broadcast
- D. none of the above

6. RPB guarantees that each destination receives _____ of the packet

- A. one copy

- B. no copies
- C. multiple copies
- D. none of the above

7. In _____, the multicast packet must reach only those networks that have active members for that particular group.

- A. RPF
- B. RPB
- C. RPM
- D. none of the above

8. _____ adds pruning and grafting to _____ to create a multicast shortest path tree that supports dynamic membership changes

- A. RPM; RPB
- B. RPB; RPM
- C. RPF; RPM
- D. none of the above

9. _____ is an implementation of multicast distance vector routing.

It is a source-based routing protocol, based on RIP.

- A. MOSPF
- B. DVMRP
- C. CBT
- D. none of the above

10. DVMRP is a _____ routing protocol, based on RIP

- A. source-based
- B. group-shared

- C. both a and b
- D. none of the above

Answer key for MCQ SET- 6	
Q-1	Correct Answer :Flooding
Q-2	Correct Answer :shortest
Q-3	Correct Answer :none of the above
Q-4	Correct Answer :none of the above
Q-5	Correct Answer :broadcast
Q-6	Correct Answer :one copy
Q-7	Correct Answer :RPM
Q-8	Correct Answer :RPM; RPB
Q-9	Correct Answer :DVMRP
Q-10	Correct Answer :source-based

Network Layer: Delivery, Forwarding, and Routing MCQ Set-7

1. Pruning and grafting are strategies used in _____

- A. RPF
- B. RPB
- C. RPM
- D. none of the above

2. A _____ message tells an upstream router to stop sending multicast messages for a specific group through a specific router.

- A. weed
- B. graft
- C. prune

D. none of the above

3. A _____ message tells an upstream router to start sending multicast messages for a specific group through a specific router.

- A. weed
- B. graft
- C. prune
- D. none of the above

4. CBT is a _____ protocol that uses a core as the root of the tree

- A. source-based
- B. group-shared
- C. a or b
- D. none of the above

5. PIM-DM is used in a _____ multicast environment, such as a LAN.

- A. dense
- B. sparse
- C. a or b
- D. none of the above

6. PIM-SM is used in a _____ multicast environment such as a WAN.

- A. dense
- B. sparse
- C. a or b
- D. none of the above

7. In _____, a logical tunnel is established by encapsulating the multicast packet inside a unicast packet.

- A. UNIBONE
- B. MULTBONE
- C. MBONE
- D. none of the above

Answer key for MCQ SET- 7	
Q-1	Correct Answer :RPM
Q-2	Correct Answer :prune
Q-3	Correct Answer :graft
Q-4	Correct Answer :group-shared
Q-5	Correct Answer :dense
Q-6	Correct Answer :sparse
Q-7	Correct Answer :MBONE
Q-8	
Q-9	
Q-10	