

1: A packet has arrived with an MF bit value of zero, and the fragmentation offset value is non-zero. This is the _____.?

- A) First fragment B) Last fragment
- C) Middle fragment D) No fragment

2: A message consisting of 500 bytes is passed to the IP for delivery to the destination. The first network can carry an MTU of 200 bytes. The second packet takes a different path with an MTU of 110 bytes. Assume that the IP overhead per packet is 20 bytes. What is the fragment offset for the third packet received by the destination?

- A) 22 B) 33
- C) 44 D) 88

3: A Router with an MTU of 1024 bytes has received an IP packet of size 4240 bytes with an IP header of 20 bytes. The value of MF and offset of the 3rd fragment is ____?

- A) MF = 0, OFFSET = 125
- B) MF = 1, OFFSET = 125
- C) MF = 1, OFFSET = 250
- D) MF = 1, OFFSET = 375

4: Consider an IP link with a maximum transfer unit of 700 bytes, and each datagram size to send is 2400 bytes. Assume that the datagram recently sent has an identification number of 422. What is the total number of fragments that must be sent to transfer the full datagram, and what is the offset value of the 2nd fragment from all the fragmented datagrams. ? Note: Consider the minimum header size of the IPV4 datagram.

- A) 4, 680
- B) 4, 170

C) 1, 0

D) 4, 85

5. Host A sends a UDP datagram containing 8880 bytes of user data to host B over an Ethernet LAN. Ethernet frames may carry data up to 1500 bytes (i.e. MTU = 1500 bytes). The size of the UDP header is 8 bytes, and the size of the IP header is 20 bytes. There is no option field in the IP header. How many IP fragments will be transmitted, and what will be the contents of the offset field in the last fragment?

- A. 6 and 925
- B. 6 and 7400
- C. 7 and 1110
- D. 7 and 8880

6. Two popular routing algorithms are Distance Vector routing (DVR) and Link State Routing (LSR) routing. Which of the following is true? [MSQ]

- A. Count-to-infinity is a problem only with DVR, not in LSR.
- B. In LSR, the shortest path algorithm is run only at one node.
- C. In DVR, the shortest path algorithm runs only at one node.
- D. DVR requires a lesser number of messages than LSR.

7. Which of the following is TRUE? [MSQ]

- A. Link State Routing algorithm uses Dijkstra shortest path algorithm
- B. Link State Routing algorithm uses Bellman ford algorithm.
- C. Persistent Loops are not created using Distance Vector Routing Algorithm.
- D. Split horizon eliminates persistent loops in Distance Vector Routing algorithm.

8. Which of the following is/are TRUE? [MSQ]

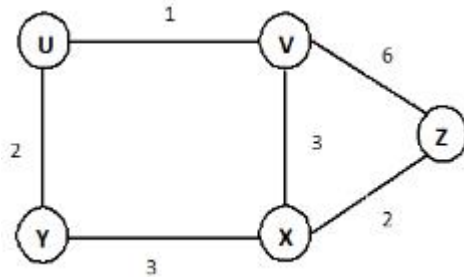
- a. Flooding guarantees the shortest path.
- b. In LSR(*link state routing*), flooding is used by nodes to send Link state information to all the nodes in the network.
- c. Flooding Link State Packets create persistent loops in the network.
- d. In OSPF, hello messages are used by nodes to know their neighbouring nodes.

9. Which of the following is/are TRUE? [MSQ]

- a. Acknowledgements to Link state update packets make OSPF more reliable.
- b. OSPF packets are encapsulated in IP datagrams.
- c. In LSR, every node generates a shortest path tree for each node.

- d. The main purpose of TTL in LSR packets is to ensure the shortest path.

10. Consider the network shown below; what would be the distance vector at Z when all the routers converge?



- a. u v x y z
6 5 2 4 0
- b. u v x y z
6 4 2 5 0
- c. u v x y z
6 4 2 4 0
- d. u v x y z
6 5 2 5 0

11. Consider an IP packet with a length of 4,500 bytes that includes a 20-byte IPv4 header and a 40-byte TCP header. The packet is forwarded to an IPv4 router that supports a Maximum Transmission Unit (MTU) of 600 bytes. Assume that the length of the IP header in all the outgoing fragments of this packet is 20 bytes. Assume that the fragmentation offset value stored in the first fragment is 0. The fragmentation offset value stored in the third fragment is _____.

- A. 144
- B. 145
- C. 146
- D. 147

12. Consider the following three statements about link state and distance vector routing protocols for a large network with 500 network nodes and 4000 links.

[S1] The computational overhead in link state protocols is higher than in distance vector protocols.

[S2] A distance vector protocol (with a split-horizon) avoids persistent routing loops but not a link-state protocol.

[S3] After a topology change, a link-state protocol will converge faster than a distance vector protocol.

Which of the following is correct about S1, S2, and S3?

- A. S1, S2, and S3 are all true.
- B. S1, S2, and S3 are all false.
- C. S1 and S2 are true, but S3 is false.
- D. S1 and S3 are true, but S2 is false

12.. Which of the following is TRUE about the interior gateway routing protocols – Routing Information Protocol (RIP) and Open Shortest Path First (OSPF)?

- A. RIP uses distance vector routing, and OSPF uses link state routing
- B. OSPF uses distance vector routing, and RIP uses link state routing
- C. Both RIP and OSPF use link-state routing
- D. Both RIP and OSPF use distance vector routing

13. What are all the fields required from the IP header to allow the destination to perform the reassembly of fragments?[MSQ]

- A) Identification
- B) MF, Offset
- C) Header length
- D) Total length

14. The checksum in IP must be recomputed at every router because of changes in ____ fields.[MSQ]

- A) TTL
- B) Options
- C) Datagram Length
- D) Offset

15: The checksum computation in the IP header includes____?

- A) IP header only
- B) IP header and data
- C) IP header and Pseudo header
- D) None of these