1. Suppose a 1500-byte datagram were to be sent over a link with an MTU size of 296. We define IP control overhead as the ratio of control information you add as IP header(s) to the IP payload length. What is IP overhead associated with all the fragments in percentage?

A) 8% B) 10% C) 12% D) 14%

2. An IP(v4) datagram received by an intermediate router, whose total length is 1500 bytes, HLEN value is $(10)_2$, and the MTU of the Forwarding link is 200 bytes. What is the total number of fragments and offset value of the last fragment?

A) 8, 168 B) 7, 144

C) 6, 120 D) 9, 200

3. Consider a message of size 1000 bytes, the IP header is 20 bytes, and the Maximum transferable unit is 256 bytes. The packet ID is 25. The fragment offset value in the fourth packet(fragment) is ____.

A) 87 B) 58 C) 29 D) 18

4. A packet has arrived with an MF(More fragments) bit value of 0. Is this the first fragment, the last fragment, or a middle fragment?

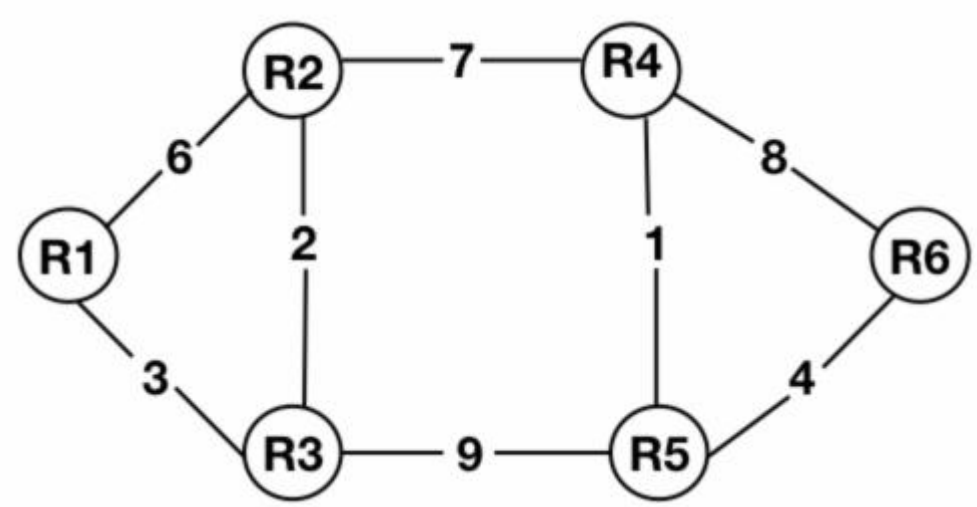
A) First fragment B) Last fragment

C) Middle fragment D) More information required

5. Two popular routing algorithms are Distance Vector(DV) and Link State (LS) routing. Which of the following is/are true? [MSQ]

A. Count to infinity is a problem only with DV and not LS routing
B. In LS, the shortest path algorithm is run only at one node
C. In DV, the shortest path algorithm is run only at one node
D. DV requires a lesser number of network messages than LS

6. Consider a network with 6 routers R1 to R6 connected with links having weights, as shown in the following diagram.



All the routers use the distance vector-based routing algorithm to update their routing tables. Each router starts with its routing table initialized to contain an entry for each neighbour with the weight of the respective connecting link. After all the routing tables stabilize, how many links in the network will never be used to carry any data? _____ **[NTA]**

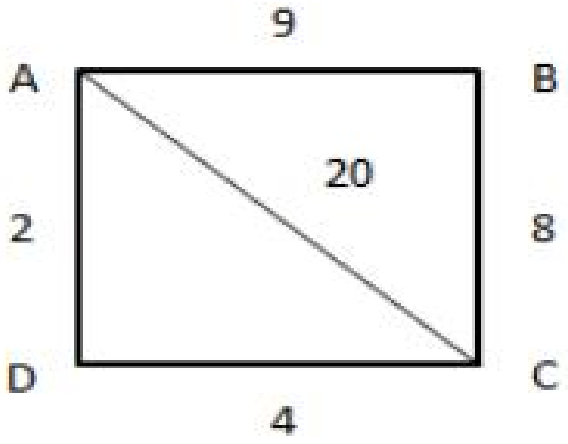
7. Consider the data given in the above question. Suppose the weights of all unused links in the previous question are changed to 2, and the distance vector algorithm is used again until all routing tables stabilize. How many links will now remain unused?

A. 0 B. 1 C. 2 D. 3

8. Consider two hosts, A and B. It is given that there are 3 routers between A and B. If an IP datagram is sent from host A to host B, what will the number of interfaces over which the datagram will travel? Also, how many routing tables will be indexed to send the datagram from A to B?

A) 8 interfaces, 3 routing tables
B) 4 interfaces, 3 routing tables
C) 4 interfaces, 5 routing tables
D) 8 interfaces, 5 routing tables

9. For the given graph, if the numbers associated with each edge are weights of the links, and if DVR is used, what is the routing table at 'C' after the tables are stabilized?



A

To	NH	Dist
A	20	A
B	8	B
C	0	C
D	4	D

B

To	NH	Dist
A	6	D
B	8	B
C	0	C
D	4	D

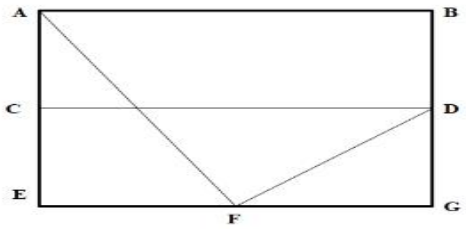
C

To	NH	Dist
A	20	A
B	8	D
C	0	C
D	4	D

D

To	NH	Dist
A	20	A
B	8	B
C	0	C
D	4	D

10. For the network in the figure below, the routing table of the nodes A, E, D and G are shown. Suppose that F has estimated its delay to its neighbours A, E, D, and G as 8, 10, 12, and 6 msec, respectively, and update its routing table distance vector routing technique. Which one of the following options represents the updated routing table of F?



Routing Tables:

A -

A	0
B	40
C	14
D	17
E	21
F	9
G	24

E -

A	24
B	27
C	7
D	2
E	0
F	11
g	22

D-

A	20
B	8
C	30
D	0
E	14
F	7
G	22

G-

A	21
B	24
C	22
D	19
E	22
F	10
G	0

A

A	8
B	20
C	17
D	12
E	10
F	0
G	6

B

A	21
B	8
C	7
D	19
E	14
F	0
G	22

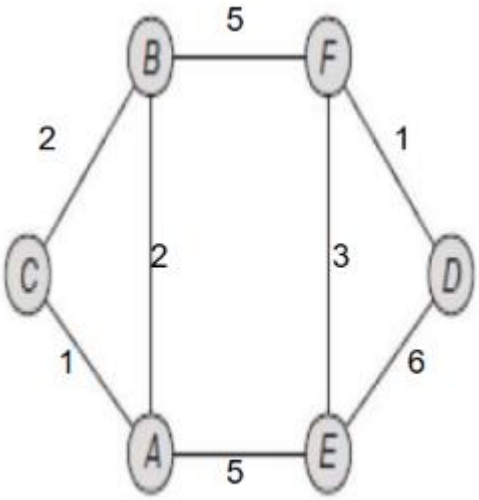
C

A	8
B	20
C	17
D	12
E	10
F	16
G	6

D

A	8
B	8
C	7
D	12
E	10
F	0
G	6

11. The subnet with 6 routers with delays is shown as a line in the following graph. It uses distance-vector routing to build the tables. Router A has measured its routes to neighbours B, C, and E. It gets a new distance of 2, 1, and 5 for B, C, E, respectively. A has received the following vectors from node B: (2,0,2,6,6,5), from node C: (1,4,0,9,7,7) and from node E: (6,8,7,5,0,3). Find which of the following is the new routing table at A.



A

To	Next hop	Distance
A	-	0
B	B	2
C	C	1
D	E	6
E	E	5
F	B	5

B

To	Next hop	Distance
A	-	0
B	B	2
C	C	1
D	E	6
E	E	5
F	B	7

C

To	Next hop	Distance
A	-	0
B	B	2
C	C	1
D	B	5
E	E	5
F	B	7

D

To	Next hop	Distance
A	-	0
B	B	2
C	C	1
D	B	8
E	E	5
F	B	7

12. Which properties are/ are False about following the Routing Algorithm? [MSQ]

A) In Static Routing, everything is set up manually & requires administration, and In Dynamic Routing, everything is done by routers Automatically.
B) Static Routing works when traffic is predictable & network is simple, and Dynamic Routing calculates routes based on received updated network state information.
C) Static Routing and Dynamic Routing, which adapt to changes depending on traffic and topology.
D) LSR is a Static routing algorithm, and DVR is the Dynamic routing algorithm

13. Which statements about routing and flooding methods are correct? [MSQ]

A) In the Routing method, there is a Routing Table that is a disadvantage compared to the flooding method.

B) In the routing method, reliability is low, and reliability is high in the flooding method.

C) In the Routing method, There is no duplicate packet, but in the flooding method, there are duplicate packets.

D) In the Routing method, Traffic is low, but in the flooding method, traffic is high.

14. 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.

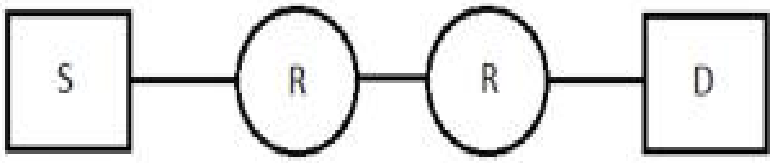
C) In DVR, the shortest path algorithm runs only at one node.

D) DVR requires a lesser number of messages than LSR.

15. Assume that source S and destination D are connected through two intermediate routers labelled R. Determine how many times each packet has to visit the network layer and the data link layer during transmission from S to D.

A) Network layer – 4 times and Data link layer – 4 times

B) Network layer – 4 times and Data link layer – 3 times

C) Network layer – 4 times and Data link layer – 6 times

D) Network layer – 2 times and Data link layer – 6 times