

## WEEKLY TEST – 09

## Subject : Computer Networks

## Topic : Routing Protocol and Switching



Maximum Marks 15

## Q.1 to 5 Carry ONE Mark Each

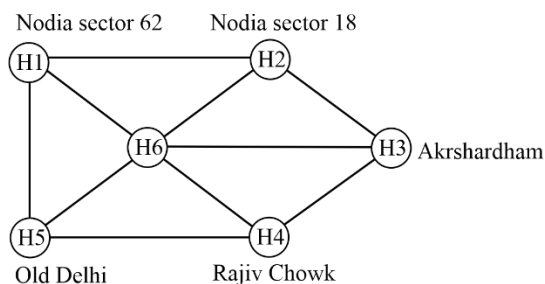
## [MCQ]

1. Which of the following technique is used in traditional telephone system?
- Circuit switching
  - Packet switching
  - Datagram packet switching
  - None of the above

## [MCQ]

2. Consider the following network and its corresponding distance vector table mentioned in some units and unknown through which cities.

	H1	H2	H3	H4	H5	H6
H1	0	2	2	2	4	1
H2	2	0	2	3	6	3
H3	2	2	0	1	3	1
H4	2	3	1	0	2	1
H5	4	6	3	2	0	3
H6	1	3	1	1	3	0



Also  $(H1, H6) = 1$ ,  $(H2, H6) = 3$ ,  $(H3, H6) = 1$ ,  $(H5, H6) = 4$ . A new highway is built between Mandi house, Rajeev Chowk, making to distance two cities to 6 units i.e.  $(H4, H6) = 6$ , units. The new distance vector of Mandi house.

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1 | 3 | 1 | 2 | 2 | 0 |
|---|---|---|---|---|---|
- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1 | 3 | 1 | 2 | 4 | 0 |
|---|---|---|---|---|---|
- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1 | 3 | 1 | 4 | 1 | 0 |
|---|---|---|---|---|---|
- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1 | 3 | 1 | 1 | 4 | 0 |
|---|---|---|---|---|---|

## [MSQ]

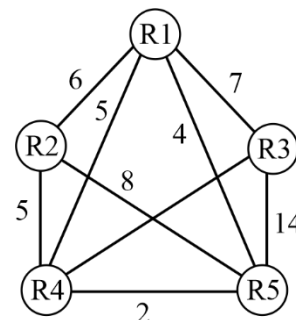
3. Dynamic routing protocol enables routers to-
- Dynamically discover and maintain routers.
  - Dynamically routing updates to other routers.
  - Reach agreement with other routers about the network topology.
  - Not distribute routing updates to other routers.

## [MCQ]

4. In a packet switching network, packet are routed from source to destination along a single path having two intermediate nodes. If the message size is 50 bytes and each packet contains a header of 4 bytes then the optimal packets size is-
- 12 bytes
  - 13 bytes
  - 14 bytes
  - 15 bytes

## [MCQ]

5. Consider a network with 5 routers  $R_1$  to  $R_5$  connected with links having weight 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 neighbor with the weight of the respective connecting link. After all the routing tables stabilize, then what will be the distance vector at router  $R_5$  ?

(a)

	R1	R2	R3	R4	R5
R5	4	8	14	2	0

(b)

	R1	R2	R3	R4	R5
R5	4	7	11	2	0

(c)

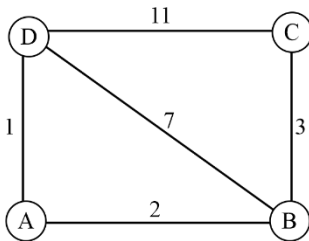
	R1	R2	R3	R4	R5
R5	4	7	14	5	0

(d) None of the above

### Q.6 to 10 Carry TWO Mark Each

[MCQ]

6. Consider the following network 4 routers.



What will be the routing table at node C after finalizing of the network?

(a)

Destination	Distance	Next Hop
A	5	B
B	3	-
C	0	-
D	6	B

(b)

Destination	Distance	Next Hop
A	5	B
B	3	-
C	0	-
D	10	B

(c)

Destination	Distance	Next Hop
A	5	B
B	3	-
C	0	-
D	11	B

(d) None of these

[NAT]

7. Consider the following Statements:

**S<sub>1</sub>:** Using Distance vector (DV) with split horizon there is no count to infinity problem.

**S<sub>2</sub>:** Link state Routing (LSR) algorithm is fast convergence algorithm because whenever the link is broken it will take  $O(1)$  time to reach to all nodes in the network.

**S<sub>3</sub>:** In circuit switching congestion can occur during connection establishment whereas in packet switching congestion can occur during data transfer.

**S<sub>4</sub>:** Circuit switching is preferable for long message whereas packet switching is preferable for short message.

How many are the total number of correct statements?

[MCQ]

8. Consider a network having 6 nodes A,B,C,D,E,F and the measured delay between A to B, A to D and A to C are 4,5,6 respectively. Which of the following is routing table of a using distance vector routing? The vector table of B,C, D are given as follows:

**A B C D E F**

Vector table of 'B' = 2 0 4 4 3 2

Vector table of 'C' = 5 4 0 2 7 4

Vector table of 'D' = 5 1 3 0 3 6

(a)

A	B	C	D	E	F
0	4	6	5	7	6
-	B	C	D	B	B

(b)

A	B	C	D	E	F
0	6	6	4	5	7
-	B	C	D	B	B

(c)

A	B	C	D	E	F
0	4	6	6	5	7
-	B	C	D	B	B

(d)

A	B	C	D	E	F
0	5	4	6	6	5
-	B	C	D	B	B

[MCQ]

9. Which of the following protocols is used to find the best path for data transmission in a network?
- (a) BGP (b) EIGRP  
(c) OSPF (d) RIP

[MCQ]

10. The RIP routing protocol is based on an algorithm that is \_\_\_\_\_.
- (a) An OSPF algorithm  
(b) A link state algorithm  
(c) A centralized routing algorithm  
(d) Based on information received only from link neighbors.



## Answer Key

- |            |             |
|------------|-------------|
| 1. (a)     | 6. (a)      |
| 2. (b)     | 7. (4 to 4) |
| 3. (a,b,c) | 8. (a)      |
| 4. (c)     | 9. (b)      |
| 5. (b)     | 10. (d)     |

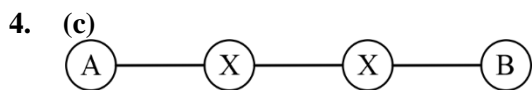
## Hints and Solutions

1. (a)  
Circuit switching is used long- distance communication link that must be constant for lengthy period of time.

2. (b)  
 $a = \min(1 + 0, 3 + 2, 1 + 2, 6 + 2, 4 + 4) = 1$   
 $b = \min(1 + 2, 3 + 0, 1 + 2, 6 + 3, 4 + 6) = 3$   
 $c = \min(1 + 2, 3 + 2, 1 + 0, 6 + 1, 4 + 3) = 1$   
 $d = \min(1 + 2, 3 + 3, 1 + 1, 6 + 0, 4 + 2) = 4$   
 The distance vector of Rajiv Chowk is:

1	3	1	2	4	0
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3. (a,b,c)  
Dynamic routing protocol enables router to dynamically discover and maintain router, distribute routing updates to other router and reach agreement with other routers about the networking topology.



Message size = 50 bytes (M)

Header size = 4 bytes (h)

Number of hops (X) = 3

From the formula of optimal payload

$$P = \sqrt{\frac{Mh}{X-1}}$$

$$P = \sqrt{\frac{50 \times 4}{3-1}}$$

$$= \sqrt{\frac{50 \times 4}{2}} = \sqrt{100} = 10$$

Optimal packet size = p + h  
 = 10 + 4  
 = 14 bytes

5. (b)  
The distance vector of R5 is:
- |   |   |    |   |   |
|---|---|----|---|---|
| 4 | 7 | 11 | 2 | 0 |
|---|---|----|---|---|

6. (a)  
The final routing table for 'c'.

Destination	Distance	Next Hop
A	5	B



B	3	-
C	0	-
D	6	B

7. (4 to 4)  
All the written statements are true.

8. (a)  
Routing table at A.

A	B	C	D	E	F
0	4	6	5	7	6
-	B	C	D	B	B

9. (b)  
EIGRP (Enhance interior gateway routing protocol) is a hybrid routing protocol that combines the features of distance vector routing protocols with those of link state protocols. However EIGRP is proprietary protocol developed by CISCO system and is not widely used outside the CISCO network.

10. (d)  
The Routing Information Protocol (RIP) is a routing protocol that is based on the distance-vector algorithm. The distance-vector algorithm is a method used by routers to determine the best path to a destination network. In the distance-vector algorithm, each router maintains a table of distances to all known networks. These distances, also known as "vectors", are used to determine the shortest path to a destination network. When a router receives a packet, it compares the distance to the destination network to the distances of other known networks. If it determines that the path through another network is shorter, it will forward the packet to that network.

For more questions, kindly visit the library section: Link for web: <https://smart.link/sdfez8ejd80if>



PW Mobile APP: <https://smart.link/7wwosivoicgd4>