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Course Title : ~~Mobile and Telecommunication~~ Computer Networks

Course Code : ~~CSE 413~~ CSE-323

Final Assessment

1

Ans-to-the-Q-No-1

(a)

Here is the differences between static and dynamic routing -

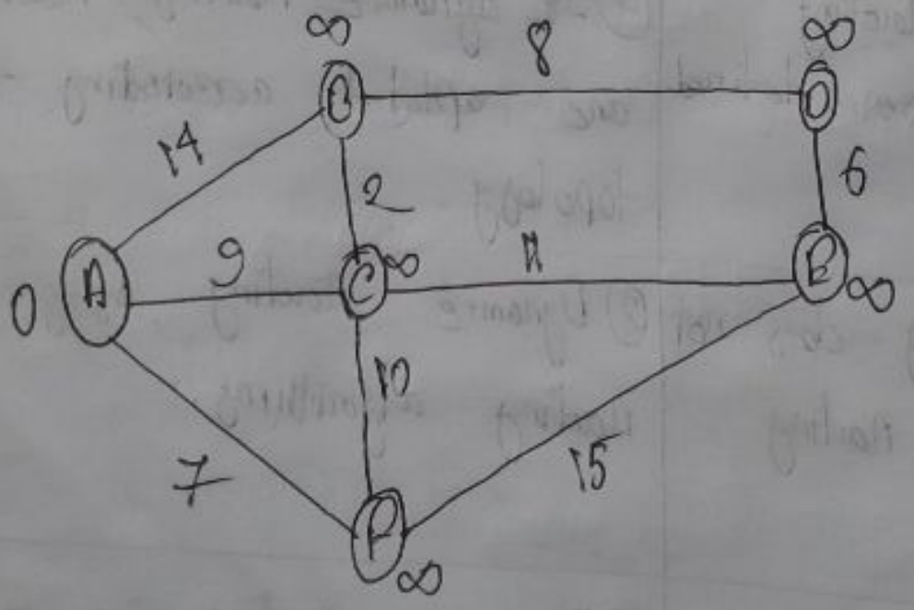
Static Routing	Dynamic Routing
① In static routing routes are user defined.	① In dynamic routing, routes are updated according to the topology.
② Static routing does not use complex routing algorithms.	② Dynamic routing uses complex routing algorithms.
③ Static routing is manual.	③ Dynamic routing is automated.
④ Static Routing is difficult to configure.	④ Dynamic Routing is easy to configure.

Ans to the Q No 1

(i)

⇒ If $(d(u) + c(u,v) < d(v))$

$d(v) = d(u) + c(u,v)$



	A	B	C	D	E	F
A	[0]	∞	∞	∞	∞	∞
F		14	9	∞	∞	[7]
C		14	[9]	∞	22	
B		[11]		∞	20	
D				[19]	20	
E					[20]	

Here, source is A and Destination is D.

A → D.

= D, B, C, A

= A, C, B, D

= 9 + 2 + 8

= 19

In the table in D main number

is 19.

Shortest path is 19.

Ans- to the- Q- No- 3

(a)

The basic concept of link-state routing is every node constructs a map of the connectivity to the network, in the form of a graph, showing which nodes are connected to which other nodes. Each node then independently calculates the next best logical path from it to every possible destination in the network. Each collection of best paths will then

form each node's routing table.
This contrasts with distance-vector routing protocols, which work by having each node share its routing table with its neighbours, in a link-state protocol the only information passed between nodes is connectivity related.

Ans to the Q No-3

(b)

It decreases the complexity of network topology, increases routing efficiency, and causes much less congestion because of fewer routing advertisements. With hierarchical routing, only core routers connected

to the backbone are aware of all Routes. Routers that lie within a LAN only know about routes in the LAN.

Ans to the Q No 3

(c)

Network Congestion when network nodes and links are overloaded with traffic. This problem usually makes the end users network slow. Congestion is often related to latency, throughput and bandwidth.

Ans to the Q No 4 (c)

(a)

Explanation: The token bucket algorithm is another method used to control data traffic in computer networks. Unlike the Leaky Bucket, which has a constant output rate, the Token Bucket allows for bursty data transfers. Imagine a bucket filled with tokens. Data packets can only be sent if there is a token available to "pay" for it.

Components:-

a) Traffic Burst Handling:

Token bucket allows for bursts of data until the bucket's tokens are exhausted,

making it suitable for applications where such bursts are common. In contrast, the leaky bucket smooths out the data flow, releasing packets at a steady, constant rate.

(b) Use Cases:

Token bucket is ideal for applications that require flexibility and can tolerate bursts, like video streaming. Leaky bucket is suited for scenarios where a steady, continuous data flow is required, like voice over IP (VoIP) or real time streaming.

Ans to the Q No 4

(D)

Differences between classful Addressing and classless Addressing-

classful Addressing	classless Addressing
① IP addresses are allocated according to the classes A to E.	① It's main work is to handle the issue of rapid exhaustion of IP addresses.
② It is less practical.	② It is more practical
③ The changes in the Network ID and Host ID depend on the class.	③ There is no such restriction of class in classless addressing.

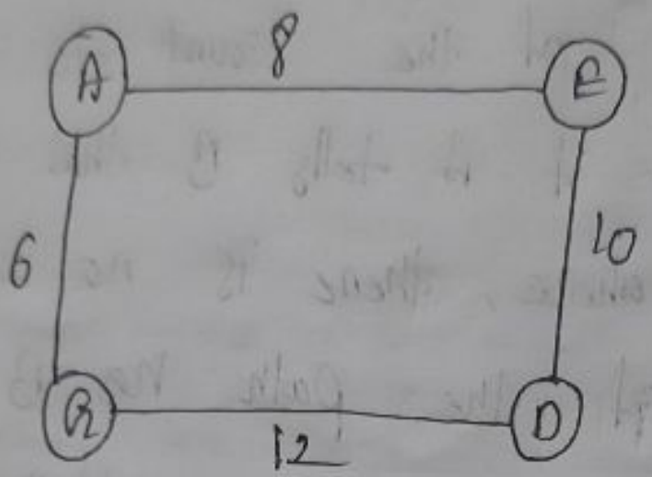
Ans to the Q No 2

(b)

~~The~~ The core of the 'count to infinity problem is that if A tells B that it has a path somewhere, there is no way for B to know if the path has B as a part of it. To see the problem, imagine a subnet connected like A-B-C-D-E-F and let the metric between the routers be "number of jumps".

Ans to the Q No 2

(a)



For A,

Dest.	Dist.	Next
A	0	A
E	8	E
D	∞	—
G	6	G

For E,

Dest.	Dist.	Next
A	8	A
E	0	E
D	10	D
G	∞	—

For D,

Dest.	Dist.	Next.
A	∞	—
B	10	B
D	0	D
G	12	G

For G,

Dest.	Dist.	Next.
A	6	A
B	∞	—
D	12	D
G	0	G

For E,

A

Dist.
0
8
∞
6

D

Dist.
∞
10
0
12

E New RT,

Dest.	Dist.	Next
A	8	A
E	0	E
D	8	A
G	14	A

For D,

E

Dist.
8
0
10
∞

G

Dist.
6
∞
12
0

D New RT,

Dest.	Dist.	Next
A	12	G
E	10	E
D	0	D
G	10	E

Bin G,

A

A
0
8
∞
6

D

D1
∞
10
0
12

G New RT

Dest.	Dist.	Next
A	6	A
E	14	A
D	12	D
G	0	G

Bin A,

E

Dist.
8
0
10
∞

G

Dist.
6
∞
12
0

A New RT

Dest.	Dist.	Next
A	0	A
E	8	E
D	18	G
G	6	G

For E,

A

Dist.
0
8
∞
6

D

Dist.
∞
10
0
12

B ~~for~~ New RT

Dest.	Dist.	Next
A	8	A
E	0	~~E~~
D	10	D
C	14	A