Assignment - 3

CSE 421

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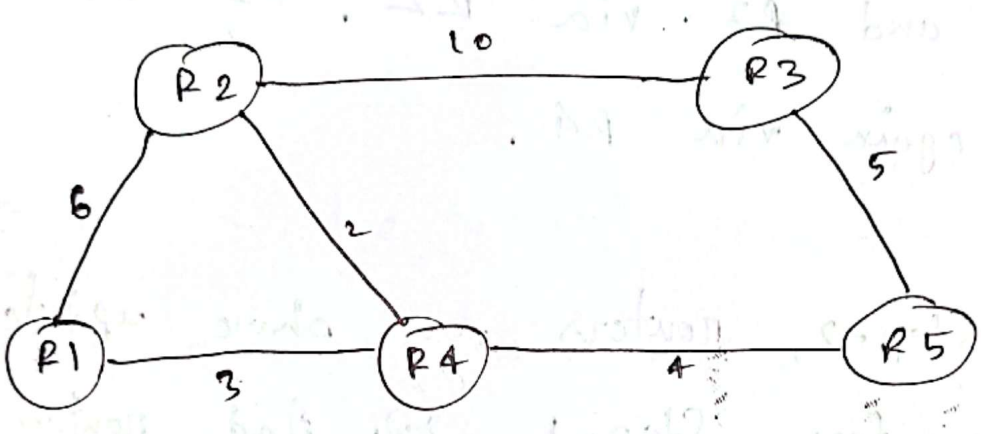
Ans to the Que No-1

(a)



(a) intial Routing Table for R1:

Destination	Cost	Next Hop
R_2	6	R2
R_3	∞	—
R4	3	R4
R5	∞	—

.. final Routing Table for R1:

Destination	cost	Next Hop
R2	5	R4
R3	12	R4, R5
R4	3	R4
R5	7	R4

(b) In cold start (Step-0), each router knows only its directly connected neighbours.

In Step-1, each router sends its known routers to their neighbours. In this way, R1 come to know about R5 via R4 and R3 via R2. R1 also know R2 again via R4.

In Step-2, routers now share updated routes from Step-1. And router R1 updates route to R3 with lower cost

$$R1 \rightarrow R4 \rightarrow R5 \rightarrow R3 = 3+4+5 = 9$$

(better than 16 via R2)

but it still updating in this step.

Finally, in Step-3, all final updates are shared and there are no shorter path. So the network has converged.

Therefore, the network takes 3 steps (initial cold start and 2 updating step) to fully converged.

(c) Yes, it will pose problem if the link between router R4 and R5 is broken after the routing tables are converged for all the routers in the network. Because-

R4 will lose direct link to R5. ~~But~~ R4 may receive a route to R5 via from R3. But breaking the link between R4 and R5 will causes a problem due to the count-to-infinity issue in distance vector routing. Since routers only know about neighbours and update periodically, R4 may wrongly believe R5 is still reachable through another router, even though that route originaly passed through R4 itself. This will lead to incorrect updates and gradualy increases costs, which will delay convergence and make the network unstable.

2 No

(a) Initial routing table of Node E:

The graph →

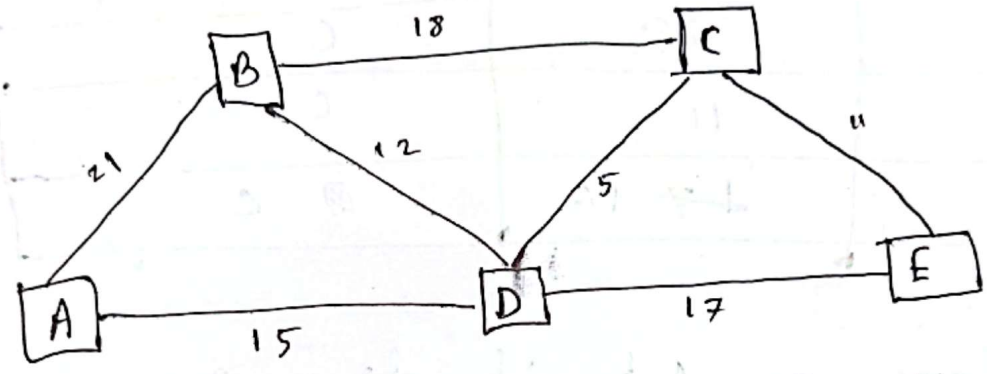


Table:

Destination	Cost	Next Hop
A	∞	—
B	∞	—
C	11	C
D	17	D

(b) Routing table of node E after one iteration:

Destination	Cost	Next Hop
A	32	& D
B	29	C
C	11	C
D	~~17~~ 16	~~D~~ C

Dest (A) ⇒ E → D → A
Dest (B) ⇒ E → C → B

(c)

Routing table of node E after two iteration:

Destination	Cost	Next Hop
A	32	D
B	29	C
C	11	C
D	~~17~~ 16	C

~~Beta~~ Same as 1st iteration. Because, D has now learned from B and A. But since distances from A to B to D to C to E are not getting shorter, Eve's routing table does not improve further.