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Computer Networks Class Test 4

Q1.
My roll number is 18CS30021, so N = 3002

1. N = 3002
   - Administration –> 3002
   - Hostel-1 –> 6004
   - Hostel-2 –> 9006
   - Residential –> 3002
   - Academic-1 – > 15010
   - Academic-2 –> 18012

(a)

Number of Subnets:
- Administration –> 2
- Hostel-1 –> 2
- Hostel-2 –> 3
- Residential –> 2
- Academic-1 –> 4
- Academic-2 –> 5

Max IPs
- Administration –> 2048 + 1024
- Hostel-1 –> 4096 + 2048
- Hostel-2 –> 4096 + 4096 + 1024
- Residential –> 2048 + 1024
- Academic-1 – > 8192 + 4096 + 2048 + 1024
- Academic-2 –> 16384 + 512+ 512 + 512 + 512

(b)

- Administration –> 19
- Hostel-1 –> 18
- Hostel-2 –> 17
- Residential –> 19
- Academic-1 –> 16
- Academic-2 –> 15

(c)

12

(d)

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(e)

- Administration –> 19
- Hostel-1 –> 18
- Hostel-2 –> 17
- Residential –> 19
- Academic-1 –> 16
- Academic-2 –> 15

Q2.

We can use the centralized Bellman-Ford Algorithm to find out the shortest paths from all other nodes to S, but with Distance Vector routing, we can only compute the shortest path from S to all other nodes. This difference can be explained by looking at the **convergence criteria** for both algorithms.

In Distance Vector routing, we do not know the number of iterations and it takes a lot of time for the algorithm to converge. **The number of nodes change constantly** and hence we can only compute the shortest path from S to all other nodes.

Although the RIP uses Distance Vector routing, it limits the maximum number of hops in a network to 16. This limit is added as a resolution to the **counting infinity problem**. To prevent routing loops from continuing indefinitely, we enforce a limit on the maximum cost of a network path(often 15 in RIP).