T-2 Solutions (Odd 2019)

Ans.1 (a) The pair of (Transmission round, window size) is varied as follows:
Note: Student can also make the table instead of diagram for windows size vs transmission round
(1, 1), (2, 2), (3, 4), (4, 8), (5, 16), (6, 32),
After first time-out, *ssthresh* is **16**.
Thereafter, window size varies as:
(7, 1), (8, 2), (9, 4), (10, 8), (11, 16), (12, 17), (13, 18), (14, 19), (15, 20), (16, 21), (17, 22), (18, 23),
(19, 11.5), (20, 12.5), (21, 13.5), (22, 14.5), (23, 15.5), (24, 16.5).

[2 Marks]

(b) At 17th transmission round, *ssthresh* is **16** and at 19th transmission round, *ssthresh* is **11.5**.

[1 Mark]

(c) Average throughput is (11.5+12.5+13.5+14.5+15.5+16.5) MSS/6RTT = $(\frac{6*(11.5+16.5)MSS}{2})*(1/6RTT)$
=14MSS/RTT=14*20480 bps=**286.72 Kbps**

[2 Marks]

Ans.4 (a)

Department name	Subnet Address	Subnet Mask
A	137.110.0.0	255.255.255.128
B	137.110.0.128	255.255.255.128
C	137.110.1.0	255.255.255.192
D	137.110.1.64	255.255.255.192
E	137.110.2.0	255.255.254.0

[3 Marks]

b). **By considering the starting address as a subnet address and last address as a broadcast address, the total number of nodes can be added as (x-2) if x is the total number of addresses possible.** Subnets A and B can grow from 100 to 126 nodes. Subnets C and D can grow from 40 to 62 nodes. Subnet E can grow from 400 to 510 nodes. As all address space has been allocated so far from low to high, all addresses from 137.110.4.0 to 137.110.255.254 are available. Smaller departments could be allocated starting at 137.110.4.0, and two small departments could also fill the two available 62 address blocks between subnets D and E.

[2 Marks]