SOLUTION QUIZ-01 BCS-5A

QUESTION-01

1. b

2. c

3. d

TRUE/FALSE

i. False
ii. True

QUESTION-02

Part (1)

We have 3 links between Client and Server: (Transmission Delay: L/R, Propagation Delay: d/s)

For Link 1, the transmission delay = $(8 * 1500)/(5\times10^6)$ = 2.4ms.
For Link 1, the propagation delay = $(160000)/(2.5\times10^8)$ = 0.64ms.
For Link 2, the transmission delay = $(8 * 1500)/(10\times10^6)$ = 1.2ms.
For Link 2, the propagation delay = $(250000)/(2.5\times10^8)$ = 1ms.
For Link 3, the transmission delay = $(8 * 1500)/(50\times10^6)$ = 0.24ms.
For Link 3, the propagation delay = $(100000)/(2.5\times10^8)$ = 0.4ms.

Total end to end delay will be Transmission + Propagation + Processing delays.
= (2.4 + 1.2 + 0.24) + (0.64 + 1 + 0.4) + (0.5 + 0.5) = 6.88 ms

Part (2)

- 5/2 = 2.5. The floor of 2.5 is 2. So, 2 users can be maintained simultaneously.
- $P = 0.25 \times (0.75)^7 = 0.03337097167$ = 0.033 or 3.33 percent.
- $P = 56 \times 0.25^3 \times 0.75^5 = 0.2076$ or 20.7 percent

SOLUTION QUIZ-01 BCS-5C

QUESTION-01

1. a

2. b

3. b

TRUE/FALSE

i. False
ii. False

QUESTION-02

Part (1)

We have 3 links between A and B: (Transmission Delay: L/R, Propagation Delay: d/s)
For A → S1, the transmission delay = (8 * 1500)/(2×10^6) = 0.006s = 6ms.
For A → S1, the propagation delay = (3000000)/(3×10^6) = 1s = 1000ms.
For S1 → S2, the transmission delay = (8 * 1500)/(3×10^6) = 0.006s = 4ms.
For S1 → S2, the propagation delay = (4500000)/(3×10^6) = 1.5s = 1500ms.
For S2 → B, the transmission delay = (8 * 1500)/(3.5×10^6) = 3.43ms.
For S2 → B, the propagation delay = (1500000)/(3×10^6) = 0.5s = 500ms.
Total end to end delay will be Transmission + Propagation + Processing delays.
= (6 + 4 + 3.43) + (1000 + 1500 + 500) + (2 + 1) = 3016.43 ms = 3.016 sec

Part (2)

- B → S2 is the bottleneck link (as it has the lowest transmission capacity, i.e. 3.5 Mbps).
- The bottleneck link in B to D is S3 → D, with a capacity of 2 Mbps. If traffic is 1Mbps then utilization is 1/2 which is 0.5 or 50%.