ECE650 HW4

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1.

a. Circuit switching creates and allocates dedicated path for a transmission and it requires a setup process. Packet switching divides message up into a sequence of packets and route is established for each packet. Each packet may take a different route. It does not require to establish the connection initially.

b. When packets are received, since packet switching’s packets arrive out of order, it needs to be reassembled while circuit switching receive in order packet and does need to be reassembled.

c. Circuit switching has constant delays while packet switching has variable delays.

2.

a. payload: 5 A B ESC FLAG

0000010101000111111000111110000001111110

b. payload: A B ESC ESC ESC FLAG 0111111001000111111000111110000011100000111000000111111001111110

c.

011111100100011111010001111100000001111101001111110

3.

generator: 1001

polynomial division:

1001|10011101000

1001

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1101

1001

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1000

1001

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100

CRC:100

Transmitted Frame: 10011101100

Third bit inverted:

1001|10111101100

1001

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1011

1001

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1001

1001

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100 <- not 000 : error detected

4.

C’s new routing table:

|  |  |  |
| --- | --- | --- |
| Destination | cost | Next hop |
| A | 11 | B |
| B | 6 | B |
| D | 3 | D |
| E | 5 | E |
| F | 8 | B |

5.

RTT = 2tp = 20ms

Maximum throughput U = (65536 \* 8) / 0.02 = 26.2144 mbps

Line Efficiency E = (26.2144 \* 106) / 109  = 2.62144%