NO.

Date

H1

1. Generate a packet: $\frac{56\times8}{64k}\cdot = 7ms$ (Decode)

Transmit a packet: $\frac{56\times8}{5M} = 89.6\mu s$

Total: $7ms + 89.6\mu s + 7ms + 10ms = 24.0896\ ms$

2. (1) $\frac{20M}{200k} = 100$

(2) $p = 10\%$

(3) $P = C_{300}^{n}(10\%)^{n}(90\%)^{300-n}$

(4) $P \geq \sum_{n=101}^{300} C_{300}^{n}(10\%)^{n}(90\%)^{300-n}$

$= 1 - \sum_{n=0}^{100} C_{300}^{n}(10\%)^{n}(90\%)^{300-n}$

~~$\approx 1 - C_{300}^{0}\cdots C_{300}^{100}$~~

$=$

3. (1) propagation delay: $\frac{200km}{2.5\times10^{8}} = 80ms$

$Rx\ ddrop = 10M \cdot 80ms = 800000 bits$

(2) 800000 bits

(3) The maximum number of bits in the link.

(4) The width of a bit = length of link / Rx ddrop.

$= \frac{200000}{800000} = 25\ m$

Shorter than a football field.

(5) 略 m/p

Date

To. 1st switch

4. (1) $\frac{4\times10^6}{2M} = 2s$

~~(2) Both store & forward considered.~~

Total: $2\times3 = 6s$

(2) 1st packet to 1st switch: $\frac{2000}{2M} = 10.1ms$

1st packet to 2nd switch = 2st packet to 1st switch

$= 2ms$

(3) Total: $2000+2 = 2002\ ms = 2.002s$

better than unsegmented

(4) Packets need to be distributed at the source and re-combined at the destination.

More headers are add to the message.

5. Maximum data rate: $6k\times20 = 120kbps > 56kbps$

$\therefore$ possible

6. Transmission delay $= x/b$

Propagation delay $= td$

Total delay $= st\ x/b + td$

of circuit switch network.

To 1st switch $= x/b$ ... ①

- 1st switch to destination $= (k-1)p/b$

Total delay of packet-switch network

$= x/b + (k-1)p/b + td$

When $(k-1)p/b < s$, packet-switch network is better