

(1). A path in a **store-and-forward** network consists of **five nodes**. At each node packets are stored in a queue and then sent out on a **First-In-First-Out (FIFO)** basis over the link to the next node. The packets contain **1024 bits** and the transmission rate is **1.544 Mbps**. The propagation delay/hop is **5 ms**.

Assume that a packet is sent along that path and that it finds on average, **five packets 70%** of the time, and **10 packets 30%** of the time when it arrives at each buffer (queue) .

(a). How long does it take for the packet to go through the path if the nodes transmit from each buffer on a **FIFO** basis?

(b). Now assume that the packet arriving at each queue gets **priority**, i.e., it is bumped to the front of the queue. You can assume that the priority packet must wait for the current packet to be transmission to be completed before its transmission can start. You can assume that **1.0 packet** (on the average) remains to be transmitted for all cases. How long is the packet travel time if it is transmitted as a **priority** packet?

Example 2

What is the remainder obtained by dividing $x^7 + x^5 + 1$ by the generator polynomial $x^3 + 1$?

Example 3

Data link protocols always put the CRC in a trailer rather than in a header. Why?