

**Department of ICT, MIT, Manipal**  
**Principles of Data Communication [ICT 2156]**  
**Tutorial 7**

1. A channel has a data rate of 4 kbps and a propagation delay of 20ms. For what range of frame sizes does stop-and-wait give an efficiency of at least 50%?
2. Consider the use of 1000-bit frames on a 1-Mbps satellite channel with a 270-ms delay. What is the maximum link utilization for:
  - a. Stop-and-wait flow control?
  - b. Continuous flow control with a window size of 7?
  - c. Continuous flow control with a window size of 127?
  - d. Continuous flow control with a window size of 255?