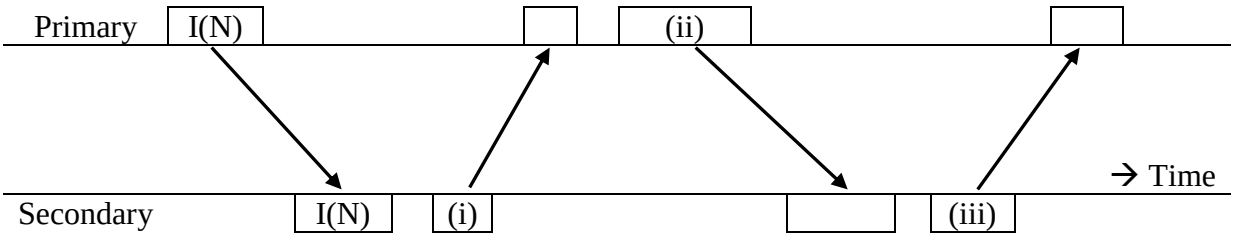
Subject :	SEHH2238 : Computer Networking
Lab/Tutorial :	**Session 4 : Data Link Control**

1) ARQ Control Scheme

Fill in the name of frame being transmitted

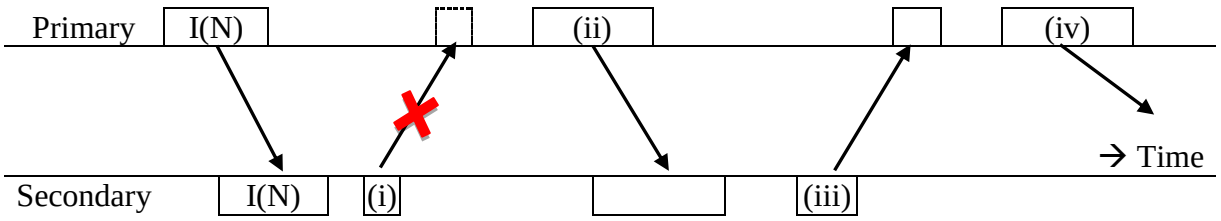
(a) Error Free

(i)_____ (ii)_____ (iii) _____



(b) Loss ACK

(i)_____ (ii) _____ (iii) _____ (iv) _____



2) Stop-and-Wait ARQ

1. A system uses the Stop-and Wait ARQ Protocol. If each frame carries 1000 bits of data, how long does it take to send 1 million bits of data if the distance between the sender and receiver is 5000 km and the propagation speed is 2×10^8 ms^{-1}? Assume the channel data rate is 1 Mbps and ignore processing delays and ACK transmission time. Further assume that no data or control frame is lost or damaged. Also ignore the overhead due to the header and trailer.

2. Continue from the previous question. Further assume that there is a data frame lost in every 10 data frames sent. Sender retransmits the lost frame after a timeout of 100 ms. How long does it take to send 1 million bits of data?

3) Bit Stuffing

1. Bit stuff the following data

   0001111111001111101000111111111111000011111

   What should be the content of the data frame to be sent? (Ignoring the header and trailer)