Problem 1 [10 points]
Peterson and Davie, Chapter 2, Exercise 5

Problem 2 [10 points]
Peterson and Davie, Chapter 2, Exercise 24

Problem 3 [10 points]
Peterson and Davie, Chapter 2, Exercise 26

Problem 4 [20 points]
Peterson and Davie, Chapter 2, Exercise 28

Problem 5 [10 points]
Peterson and Davie, Chapter 2, Exercise 36

Problem 6 [20 points]
Peterson and Davie, Chapter 2, Exercise 49 (a) & (b)

Problem 7
Consider the scenario where Host A is sending three packets to Host B. Each packet is 1500 bits long. Assume that all the delay from Host A to Host B is due to queuing delay at a bottleneck first-come-first-serve store-and-forward queue along the path and transmission delay from that queue (i.e., all other contributions to the end-to-end delay are negligible). This queue is served by a 1 Mbps link on the first-come-first-served basis.

Assume that the bottleneck queue is empty initially. The three packets from Host A are inserted in this queue at 0 ms, 2 ms, and 4 ms, respectively. Some other ongoing connections to destinations other than Host B share the bottleneck queue with the connection from Host A to Host B. These other connections insert in the bottleneck queue a 4000 bit packet at 0.5 ms and a 2000 bit packet at 3 ms.

(a) Find the times when the packets from Host A are delivered to Host B. [10 points]

(b) Suppose that the Host B wants to forward these packets to the associated display system with the spacing between consecutive packets same as at the time of origination (i.e., 2 ms). A commonly implemented strategy for forwarding packets at a regular interval calls for applying a “build-out delay” to the first packet received such that the packets are forwarded as early as possible while meeting the requirement of the fixed spacing between consecutive packets. Under this strategy, for the packets receive from Host A, what “build-out delay” should Host B apply? [10 points]